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NOTICE TO SUBSCRIBERS

Consequent on paper rationing, new subscribers in Great Britain cannot be accepted until further notice. Any applications will be put on a waiting list, and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions. Orders for overseas destinations can now be accepted

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are: Mondays to Fridays 9.30 *a.m. till* 5.30 *p.m.*

The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Fostering Industrial Research

AT a recent meeting of the Federation of British Industries Grand Council, under the chairmanship of the President, Sir Clive Baillieu, it was decided to convene in London a two-day conference on the subject of "Industry and Research." Special emphasis will be laid at the conference—to be called in the late autumn or early spring—on the practical means by which research can assist industry and promote industrial efficiency, exports, full employment, and a higher standard of living. A first task will be to conduct a survey of existing research facilities in Great Britain. The immediate plans of the F.B.I. Industrial Research Committee include a proposal for the calling of a conference of those who were organising or conducting research in industry so that they may present their views and give the results of their experience to industry. The Committee believes there is urgency in the need to reduce the time-lag sometimes existing in this country between research and its application or development. Dr. B. J. A. Bard, B.Sc., D.I.C., Barrister-at-Law, has been appointed Secretary of the F.B.I. Industrial Research Committee and head of the F.B.I. Research Secretariat. The chairman of the F.B.I. Industrial Research Committee is Sir William Larke.

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Institution of Locomotive Engineers Luncheon

The luncheons given by the Institution of Locomotive Engineers enjoy an extremely high reputation and have become important occasions for the foregathering of locomotive engineers from many parts of the world, who can arrange to be in London at the time one of these functions falls to be held. The luncheons, of course, replace as a wartime measure, the annual dinner which was a feature of pre-war years from the viewpoint of locomotive engineers, and, we may add, the many guests of members of the Institution, who attended. Last Friday the Institution, under the presidency of Mr. W. S. Graff Baker, held a luncheon which was additional to the annual function and was a somewhat delayed celebration of VE-Day. As will be seen from the list of guests shown on another page, it was as successful as all its predecessors. Mr. J. Elliot, Deputy General Manager of the Southern Railway, proposed the toast of the Institution in a humorous speech and Mr. O. V. Bulleid, Chief Mechanical Engineer of the Southern Railway, whose new "West Country" class locomotives had been announced a few days before the luncheon, was in equally happy vein. The President treated the matter rather more seriously, as became his office, but Mr. Evan Evans, Operating Manager (Railways), L.P.T.B., maintained the lighter note, and showed that our "Scrap Heap" page formed part of his reading.

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The Indian Railway Budget, 1945-46

In his Railway Budget speech in the Council of State for India, Sir Arthur Griffin, Chief Commissioner of Railways, included the following information. The financial year ended March 31, 1945, closed with a net revenue of Rs. 69·82 crores (£52,365,000), a figure all but Rs. 19 crores in excess of that secured during the previous year. After interest charges amounting to Rs. 27·81 crores (£20,857,500) had been deducted, the surplus available was Rs. 42·01 crores (£31,532,500), a figure within Rs. 1 lakh (Rs. 0·01 crores) of the budget estimate. The budget estimates for 1945–46 are based on working expenses amounting to Rs. 140·65 crores, Rs. 12·09 crores higher than the revised estimate for 1944–45, and the 1945–46 surplus is expected to be Rs. 36·51 crores (£27,382,500), Rs. 5½ crores less than in 1944–45. Indian railways are now carrying about 1,000,000 more tons of goods every month and over 1,000,000 more passengers daily than in 1938–39. Between the latter year and 1943–44 net ton-mileage has increased by 28 per cent., and passenger-miles by 74 per cent. During the same period the overall broad-gauge wagon utilisation improved by an increase of 22 per cent. in the average wagon load, this average load giving a percentage use of available capacity of 74 per cent., a most satisfactory figure.

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The Indian Locomotive and Rolling Stock Position

Continuing his speech Sir Arthur announced that the supply of metre-gauge locomotives and wagons from overseas had continued steadily, and practically the full number ordered in India would shortly be in service, enabling the full military load on the Assam communications to be maintained. Due to the difficulty in obtaining component parts, however, the supply of broad-gauge wagons built in India had not been so satisfactory; the position was, however, improving. More broad-gauge locomotives were now essential and it was hoped that they would be forthcoming during 1945. In fact, it was expected that 572 locomotives and 29,052 general service wagons would be put into broad-gauge service this year, 7,242 of these wagons being Indian-built. He refuted the suggestion that there might be a surplus of rolling stock after the war. There would then still be a large number of

broad-gauge locomotives due for replacement, and many now kept in service only by extensive and uneconomical repairs would be scrapped forthwith. Few passenger locomotives had been ordered during the war and many new ones would be required. Similarly, there would be large numbers of wagons that would have to be written off, and fewer would actually be in service as more would be under repair than at present to make up on arrears of maintenance. Sir Arthur further announced that an agreement was about to be concluded for the sale of the Singbhum workshops of the East Indian Railway for the manufacture therein of locomotive boilers initially, and complete locomotives later [presumably by a private concern]. Machinery was also beginning to be installed in the Kanchrapara works of the Bengal & Assam Railway for locomotive building.

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Overseas Railway Traffics

After a slight rally the prices of the stocks of British-owned railways in Argentina have shown a tendency to droop in the absence of any special features of interest affecting them. The latest Argentine traffics are generally satisfactory. They are for the week ended July 7 and cover exactly the first seven days of the new financial year and the aggregate figures are in consequence the same as those for the week. For the previous year the aggregate figures appearing in the returns are for the period July 1 to 8 and therefore include eight days, as against the seven for this year. Weekly figures for the Argentine North Eastern and the Entre Rios are respectively £17,969 and £25,700, showing increases of £2,794 and £4,081, whereas the aggregate figures, for the reasons above stated, show increases of £362 and £1,075 only.

	No. of week	Weekly traffics	Inc. or dec.	Aggregate traffic	Inc. or dec.
		£	£	£	£
Buenos Ayres & Pacific* ...	1st	119,250	+ 4,563	119,250	+ 2,938
Buenos Ayres Great Southern*	1st	180,625	+21,812	180,625	+ 1,250
Buenos Ayres Western* ...	1st	66,063	+ 6,313	66,063	+ 688
Central Argentine*	1st	177,475	+ 3,578	177,475	− 17,891
Canadian Pacific	27th	1,248,600	+40,400	32,194,200	+ 71,000

* Pesos converted at 16 to £

A substantial improvement in the gross earnings of the Canadian Pacific Railway has taken place since the end of May, when there was a decrease on the year to date of £252,800. Gross receipts up to July 7 show an advance of £71,000.

* * * *

Improved Travel in Eire

A slight improvement in the fuel position in Eire has permitted controls to be relaxed to the extent that an extra running day every week has been added to the schedule of the Irish Transport Company, and Sunday rail services to some Irish seaside resorts have been resumed, as we recorded briefly last week. On April 26, 1944, in consequence of serious fuel difficulties, rail services on the main lines in Eire were reduced to one train a day in each direction on but two days a week. In July of last year the position had eased sufficiently to permit the extension of the skeleton schedule to four days a week—Monday, Tuesday, Thursday, and Saturday—with goods trains operating on five days weekly. A six-day weekly passenger service was instituted during the Christmas period last year, but from January 1 last passenger services were again reduced to four days. The first passenger trains on Friday in a period of nearly 15 months left Kingsbridge Station for the provinces on July 6, and on Sunday, July 8, passenger services were restored on the Dublin-Bray, Waterford-Tramore, and Cork to Youghal and Cobh sections. It was the first time in five years that Irish people were able to travel to the seaside on Sunday by rail. About 7,600 used the train service from Westland Row to Killiney, Blackrock, Dun Laoghaire, and Bray. An unusual feature was that, of the total, 7,300 travelled on the first six trains. There was queueing at Westland Row, but the service was adequate and trains ran to schedule.

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Graduate Railway Engineers

Recently the American Railway Engineering Association has been endeavouring to establish co-operative relations with American universities, and a committee set up for this purpose has addressed a letter to the heads of 38 university schools of engineering in the United States, asking for frank comment on the question of arranging new courses, or continuing old ones, designed to fit their graduates for railway service. The reply of the universities was surprising in its unanimity. It was, in general, that the railways did not show sufficient interest in the graduates. Most of the universities reported that every year representatives of various industries visited them on the look-out for suitable senior men, but that the railways neglected to make such contacts, so that the cream of the university product went elsewhere. Opportunities for railway employment, indeed, had been relatively few, and the rewards small, as compared with those in other realms of engineering industry. As a result, the number of graduates entering railway engineering service had been gradually diminishing, and some of the universities had withdrawn from their curricula courses that were specially designed for prospective railway engineers. But most of the universities welcomed the revival of interest displayed by this A.R.E.A. letter, and expressed their readiness to co-operate, if the railways would furnish a list of the subjects which, in their opinion, would best fit graduates for a railway engineering career.

* * * *

The Collision near Kirkby

The collision at Dale Lane, near Kirkby, L.M.S.R., on April 19, when an express, travelling at speed in a thick morning mist, ran into an engine and brake which had entered the main line without the signalman realising it, arose directly out of a misunderstanding between him and the goods guard, but indirectly from the failure of the regular signalman to come on duty. The facts have been given in Colonel Trench's report, summarised on another page. The fork lines leading to a factory could not be used until the box was open, and trains conveying new shifts there were unable to proceed. A young signalman, going to Kirkby Station to take duty, learned of this and offered to open the box, where he had been twice during his training. The Traffic Controller accepted this offer, and the trains were got on the move. The engine and brake required to use a crossover on the main line and the signalman set the points, intending to deal with this move, but later replaced them to normal, having decided to give precedence to the express. The driver, however, moved at once out of the fork line. There was no fixed shunt signal there, but it was said that a whistle and perhaps some gesture from the box were taken as an authority to move, although the signalman said he was merely calling the guard to come and speak to him. When the guard went to the box he neglected to explain where the engine and brake were standing, for which course he offered a lame excuse, and the signals were eventually cleared for the express in error.

* * * *

Reconstruction Plan for London

The reports to be submitted to the London County Council in connection with the County of London Reconstruction Plan were outlined by Lord Latham, leader of the L.C.C., at a press conference held at County Hall on July 12. The four main defects with which the County of London Plan endeavours to deal are congestion of traffic, depressed housing, intermingling of housing and industry, and lack or mal-distribution of open spaces. The report of the Finance Committee emphasises that more financial aid will be needed from the Exchequer to implement the County of London Plan in any substantial degree. Increased capital grants are needed for approved road schemes, and grants for new open spaces. Lord Latham explained to the conference that expenditure on roads during the first three or four post-war years would be £7,000,000; expenditure on open spaces would amount to £4,000,000; and on reconstruction areas the sum would be about £15,000,000. The expenditure during the first period of 10 years might reach a total of £200,000,000. At the date of the signing of the report of the Town Planning Committee, the Railway (London Plan) Committee set up by the Minister of War Transport to investigate the position in relation to railways had not published its conclusions. The railway implications of the County of London Plan, 1943, were outlined and discussed in our issues of July 16 (page 55) and August 27 (page 199), 1943.

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U.S.A. Freight Diesel Progress

Some twenty years ago the first diesel-electric shunting locomotives took up service in the shunting yards of railways in the United States. By 1944, as is revealed in statistics published recently by the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission, just over one-fifth of all the shunting-hours in the yards of Class 1 railways in the U.S.A. was performed by diesels. Even between 1940 and 1944 the service thus performed by diesels was more than doubled, for the diesel percentage of the total shunting-hr. rose from 8·9 to 20, while the steam proportion fell from 79·3 to 68·1 per cent. The progress of diesel power during the last two or three years in the haulage of American freight has been even more remarkable. In 1944, 125 were added to the stock of 5,400 b.h.p. long-distance freight diesels, bringing the total to 202 of these quadruple-unit locomotives, each worth about $500,000. Whereas in 1944 the increase in the gross tonnage of freight traffic handled on Class 1 railways was only 1·69 per cent. over that handled in 1943, the diesel-hauled proportion of it rose by no less than 190 per cent. As yet the proportion of diesel to steam units engaged exclusively in freight traffic is only small (at the end of 1944 it was 3·59 per cent.), but the diesels, with their systematised servicing and con-

tinuous availability, are performing service out of all proportion to their numbers, and their value in handling wartime traffic is a guarantee that this type of power will not suffer from neglect when final peace returns.

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Cold Rolling of Steel

The benefits derived from doing cold work on steel are widely recognised as increasing its resistance to wear by work-hardening. Investigators have argued that the exceptional life of early steel rails, for example, was largely due to the cold rolling of their running surfaces by relatively light traffic in the early years of their life. In Russia new rails deliberately have been laid in lightly-trafficked lines so that they may acquire this surface hardening before transfer to main lines; and in Great Britain proposals have been made for the cold rolling of rails in special mills before delivery, though such ideas have never come to fruition. Recently the Norfolk & Western Railway of the United States has been applying the same principle to locomotive tyres and the wheel seats of axles. The aim has been to smooth out surface scratches and abrasions of the steel caused by tools during the turning in lathes, as these minute defects in the past have proved the starting-point of cracks that have resulted eventually in tyre and axle fractures. It is also held that the compressive stresses exerted during the cold rolling help to offset the tensile stresses sustained in service by the same areas of the steel, and that by the elongation and compression of the grain structure an increase in hardness is obtained, similar to that acquired by steel rails in the ways previously mentioned.

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The S.R. "West Country" Pacifics

Sir Eustace Missenden, General Manager of the Southern Railway, announces these newest "Pacifics" as the first-fruits of the company's promise of post-war improvements. It is pleasing to see that the green livery has been restored with the appearance of the first of these engines; the names, too, will be chosen appropriately from towns and villages in Wiltshire, Dorset, Devon, and Cornwall. The new locomotives are virtually a lighter edition of the "Merchant Navy" class, and include the striking new features introduced with those notable engines. The principal difference is in the smaller cylinders, and much smaller firebox; in the latter the grate area is 38¼ sq. ft., as against 48½ sq. ft. in the "Merchant Navy" class. This reduction in size has allowed the wheelbase to the rear of the trailing coupled wheels to be diminished. The tender of the new class holds 500 gal. less water than the earlier design; but the coal capacity is unchanged at 5 tons. The proportionate saving in weight is greater there than in the engine which, at 86 tons, is only 6½ tons less than the "Merchant Navy" type. This, then, is far different, in the result, from Sir Nigel Gresley's parallel, the "Green Arrow" and the smaller "Bantam Cock," where the engine weights in working order are 93 tons 2 cwt. and 70 tons 8 cwt. respectively. For the "West Country" engines, however, far harder tasks are envisaged than could be given to a "Bantam Cock." Lightness, power, and flexibility of wheelbase should enable Mr. Bulleid's latest design to perform work of outstanding merit.

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C.P.R. Locomotive Improvements

The group of C.P.R. locomotives illustrated elsewhere in this issue is representative of a series of 45 Pacifics ordered by the company and of which the last has been delivered recently. A special feature in the construction of these engines was the flame-hardening of piston-ring grooves, the first application of the process, for this purpose, in Canada. Flame-hardening is used extensively for the treatment of gear teeth, tank-turret tracks, and other engineering components subject to considerable wear. Applied to piston-ring grooves, the flame-hardening process is expected to reduce maintenance costs by prolonging the life of the piston. Another improvement to these engines, tried for the first time in Canada, was the fitting to the crossheads of die-cast aluminium-alloy slippers. Compared with those made of steel, the new slippers cut down weight by approximately one-third, an important consideration where rapid reciprocating movement is involved. The saving of weight on some C.P.R. locomotives has been carried a stage further by the use of aluminium for the upper parts of the driving cabs. Last February, a number of these Pacifics played an important part in the record freight movements over C.P.R. eastern tracks throughout the whole of that storm-swept month. During that time Canadian locomotives drove snowploughs a total distance of 58,766 miles and assisted in handling a great quantity of freight, snow-bound in terminal stations of the United States.

Railway Charges and Costs

AT the annual general meetings last March of three, at least, of the four main-line railway companies, the Chairmen made it abundantly clear that in their view the time had arrived when the matter of the increasing disparity between railway costs and charges should receive consideration. Since then little has been heard of what must be undoubtedly one of the most important matters concerning the railway companies, as a prelude to the return to peacetime operations.

The Government White Paper showing the financial results of the operation of the controlled railways for last year gave the figure of £301,167,000 as total expenditure, which compared with £272,247,000 for 1943, and £251,715,000 for 1942. Although the total receipts last year were £394,360,000 against £381,679,000 for 1943, and £343,487,000 for 1942, there was a decline in net receipts from the peak of £109,432,000 for 1943 to £93,193,000 for 1944, or little more than the £91,772,000 for 1942. Obviously, therefore, the growth in expenditure was greater than that of receipts. With the end of the war in Europe, it needs no very strong imagination to suggest that passenger and goods movements have declined; indeed, a noticeable reduction had already occurred before the end of last year, and it has undoubtedly become greater during this year.

The removal from this country of very large bodies of men in the armed forces either to Europe or to the Far East, and the repatriation of considerable numbers of Canadian and American service men, has presumably resulted in substantial reduction in the large number of special trains run by the railways for the conveyance of military personnel, stores, petrol, ammunition, etc. It is also reasonable to assume that there has been some reduction in civilian travel on Government business and of movements of persons connected with war production, which have reduced rail traffic. So far there has been no marked increase in civilian production to make good these losses, and it would appear that any such revival is likely to be a gradual process. It seems fairly safe to assume, therefore, that railway traffics of all kinds during 1945 are likely to be well below the optimum which they reached during 1943.

At the annual meeting of the Great Western Railway Company, Sir Charles Hambro pointed out that on the quantum of traffic which the railways carried in the years immediately preceding the war, railway charges would have to be raised by about 50 per cent. to cover the increased costs and yield the pre-war net revenue, and by about 60 per cent. to give them their standard revenue. So far, the increase in railway charges since 1939 is, broadly, 16⅔ per cent. Since Sir Charles Hambro spoke, the position has probably worsened appreciably as the substantial increases in the price of locomotive coal authorised at various times during 1944 will be operative throughout the whole of 1945. An even more important factor to be borne in mind is that the recent demands of the unions for increased minimum wage rates and improved conditions of service, which it is understood are still under consideration by the Railway Executive Committee, would, if granted in their entirety, obviously represent an additional burden of great magnitude.

It is clearly impossible at the present time. to estimate with anything approaching accuracy the probable level of rail traffics when Government control ceases, as so much will depend on Government policy as to the rehabilitation of the country's export trade and the stimulation of industry generally. The railway control agreement with the Government makes specific provision for control to be continued for at least one year after the cessation of hostilities, so that before it comes to an end time will be given for the operation of any statutory machinery governing the level of charges. No one knows when this will be, but Mr. P. Noel-Baker, when Parliamentary Secretary to the Ministry of War Transport, hazarded a guess that it might be about two years from the end of the war in Europe. Should his guess prove anything like correct, the railway companies will have none too much time to reach a decision on this vital point, with so many imponderable factors involved, and to get their proposals considered and approved by the statutory machinery.

On the other hand, it is useless for them to endeavour to frame definite proposals until they have been given some positive indication of the action the Government proposes to take, at least to honour the pledge given in 1939, to introduce legislation to relax certain statutory requirements in connection with the charges on merchandise traffic by railway and to authorise them to make reasonable charges subject to certain safeguards. It is true that the present

Minister of War Transport, Lord Leathers, stated in the House of Lords on October 27, 1944, that, even should it be found appropriate in the post-war circumstances to proceed with these proposals, he was firmly convinced that some more radical solution had to be found. He admitted, however, that he was not able to put forward any precise suggestions, nor has he since given any indication as to the lines which he suggests might be followed to prevent the post-control continuance of the pre-war uneconomic competition between rail and road goods transport.

The principal problem to be considered in connection with inland transport in the post-control era is obviously that of securing some better relationship between rail and road goods transport. Discussions between the railways and the road haulage industry were held up pending the formation of the National Road Transport Federation at the end of last year, but it is understood that they are now proceeding. In this connection it is of interest that one of the main points of the Federation's policy has been declared to be "to confer with other forms of inland transport, to secure that state of inland transport that will afford the maximum benefit for the public at large and provide an economic loss for the most extensive and comprehensive transport services in the best national interest."

In all the circumstances it seems probable that no serious consideration is likely to be given to the future level of railway charges until after the results of the General Election are known and the new Government gives some indication of the line it proposes to take both as to the railways and road haulage. It would not be in the least surprising, however, if any Government pronouncement were delayed until the railways and the National Road Federation have completed their discussions, and are either in a position to place joint proposals before the Minister for consideration or intimate that they have failed to reach an amicable solution, a contingency which we assume is not likely to arise in view of the vital issues involved.

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Great Western of Brazil Railway

IN the report of the Great Western of Brazil Railway Co. Ltd. for the year 1944 it is shown that the increase of £240,313 in the gross receipts in comparison with 1943 was more than overtaken by the rise of £304,673 in working expenses, with the result that net receipts were lower by £64,360. Railway traffic benefited from the practical elimination of road transport competition and the restriction of sea traffic between the ports served by the company. Receipts also benefited by increases in rates, some of which came into force in October, 1943 (sugar cane and sugar tariffs and cotton and general goods contract rates) and by the general increase of 20 per cent. on all tariffs, with the exception of foodstuffs, which came into force on September 18, 1944. On the other hand, working expenses were greatly augmented by the increase in wages which came into effect as from December 1, 1943, and by the continual rise in the price of materials. The accompanying table compares some operating figures for the past two years :—

	1943	1944
Miles open...	1,030	1,030
Passengers	5,147,728	7,013,378
Total tons	2,622,627	2,944,851
Ton-kilometres	217,380,829	230,807,558
Operating ratio, per cent	77·12	87·09
	£	£
Passenger receipts	242,100	360,284
Goods traffic receipts	638,952	732,189
Gross receipts	956,819	1,197,132
Working expenses	737,863	1,042,536
Net receipts	218,956	154,596

Due to the prolonged rainy season of 1944 the track suffered severely and special permanent way gangs had to be organised. The rains also had the effect of paralysing the transport of firewood from the forests to alongside the line and this necessitated the use of coal and oil fuel to a gretaer extent than anticipated and involved an increase in the fuel bill of no less than £81,000. It had been hoped that the increase of 20 per cent. in tariffs would suffice to meet the cost of the higher wages scale which had been ordered as from December 1, 1943. Since the end of the financial year, however, the Brazilian Government has authorised further advances in salaries and wages to meet the continuing rise in the cost of living, which is expected to cost the company about £128,000 annually. The Government has at the same time granted the company authority to raise provisionally its existing tariffs, pending the submission by the company of a definite proposal for the revision of all its charges.

The board desires to accord its chief representatives in Brazil the status of local directors in Rio de Janeiro, responsible to the board in London. Powers are being sought at an extraordinary general meeting of the company to be held immediately after the annual general meeting, to add to the articles of association in order that this local board may be created.

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Signalling Progress in New South Wales

THE article appearing at page 63, describing an interesting single-line signalling installation on the New South Wales Government Railways, is a reminder that our fellow citizens in that region of the Empire overseas are in no degree behind us in this country in making use of the most approved methods of signalling. The importance of signalling was recognised comparatively early in the development of railways in Australia. The well-known Worcester firm of McKenzie & Holland established works in Victoria and Queensland, which were ultimately responsible for supplying a considerable amount of equipment, not only to all the Australian States but later to New Zealand and Tasmania.

It was to be expected that the principles of operation and designs of apparatus found satisfactory at home should be applied at first in Australasia, wherever circumstances permitted, but the need of satisfying local conditions, more especially on the sections of line outside the larger centres, was soon appreciated and designs developed to meet the demand. Operating conditions frequently differed widely between districts in one State, varying from the branch single line in the country, with a very infrequent service, to the main single line, over which ran mail and other fast trains, and the heavily used routes in and near the cities. Development was naturally somewhat slow at first and did not proceed uniformly in all parts of Australasia.

The first locking frame on the Victorian Railways was put to work as early as 1876, but not until 1901 was there a complete mechanical signalling layout in New Zealand, at which date, it may be remarked, the general use of electric tablet working in that country was decided on. The tablet system had come into use in Victoria in 1892. The electric train-staff system also found considerable application in some Australasian States and the block instruments of Tyer, Spagnoletti, Preece, and Winter—the last named hardly known in England but seen in India at one time, if not now—were largely used. There was also an appreciable amount of Sykes's lock-and-block.

The comparatively isolated position of Australia and New Zealand, much felt at one period, threw engineers there somewhat on their own resources, with the result that signalling had a certain tendency to develop along its own lines, as apparatus was devised to meet any particular difficulties encountered. There were only a few really large stations, but at these protection fully equal to that given by any ordinary installation in this country was provided in due course. This was especially to be seen at Sydney and Melbourne, where the suburban services attained to a frequency and importance resembling the conditions obtaining in capital cities in other parts of the world, and some large interlocking frames were in service. It was to be expected that although on the whole there should be a leaning to methods well-proved in Great Britain, there should also be a tendency in time to come under the influence of American ideas, at least as to the possibilities of using automatic signalling, for which some sections of line were particularly suitable. About 30 years ago apparently that method of working began to attract serious attention, and indeed in 1915 the speed-signalling system of aspects, taken directly from American practice, appeared in a power interlocking plant with adjacent automatic signalling sections, in South Australia. It subsequently found favour in similar circumstances in Victoria also.

The application of the A.P.B. system of single line automatic, taken from U.S.A. practice, with in some cases certain modifications, to lines in Australia and New Zealand, is a further instance of this trend. The conditions obtaining in New Zealand are probably more like those met with in the U.S.A. than one finds elsewhere in the Empire, with the exception of Canada. All these installations, and the latest power interlocking work, incorporate the highest level of technical skill and efficiency in their details, and it is in the details of such work that the signs of progress are to be sought. An installation may certainly be important by reason of its size, but size usually involves only a repetition

of similar parts. A small installation may be more interesting technically and, although containing but a few parts, may incorporate in them features of design not met with elsewhere, marked by important refinements.

Information covering Australasian signalling installations has appeared from time to time in our pages. We would refer particularly to the very complete account of signalling on the New Zealand Government Railways in our issue of January 28, 1938, based on a valuable paper presented to the Institution of Railway Signal Engineers by the Signal & Electrical Engineer, Mr. G. W. Wyles. The installations therein described are typical of the high level of development reached in that part of the world, to which additional confirmation is given by a further article in our July 4, 1941, issue, more particularly describing the very interesting automatic signal and point operation on the Wellington—Johnsonville line.

The article in the present issue by Mr. W. F. Barton, Signal Engineer, New South Wales Government Railways, describes an interesting piece of work, the equipment used in which represents the application of the most recent electrical signalling practice. On the suburban lines in and approaching Sydney the apparatus is of the most modern type and it is of interest to note that the clearing of the signals and train-stops is based on a system of speed controls with the object of attaining the utmost possible saving of time in the peak intervals. On the Melbourne electrified lines we again meet with the highest class of equipment and at places on the main Victorian lines interesting special arrangements are in use, such as long crossing loops laid out to permit non-stop crossings of trains to be effected. The double-wire mechanical signalling system has, it may be mentioned, been the subject of special attention in Victoria. In the telecommunications field, as shown by Mr. Barton's article published in our issue of September 29, 1944, a most progressive policy is in evidence and it can with certainty be said that the Australasian signal engineers can pride themselves on their achievements being in no way inferior to those of their colleagues here and elsewhere in the Empire

* * * *

Swiss Train Services in the European War

ONE of the most remarkable railway phenomena of the war years in Europe has been the way in which the small central country of Switzerland, hemmed in by belligerents, has been able not merely to maintain its normal internal passenger services, but even to improve them. The cessation, in the closing months of the war, of all through international traffic, might have been expected considerably to affect such main lines as the Gotthard, the Simplon, and others. Nevertheless, these Swiss main-line services, so far from being reduced, have on the whole been increased. For example, over the Gotthard route in the summer of 1939, between Arth-Goldau (where the lines from Basle and Zurich join) and Chiasso, on the Italian frontier, there were 14 daily express trains, 7 in each direction, taking an average of 3 hr. 30 min. for the journey of 123 miles. In the 1945 summer timetable there are 22 expresses, averaging 3 hr. 29 min., and though the quickest time has been slowed down from 2 hr. 59 min. to 3 hr. 8 min., the general standard of speed as well as of frequency has been improved.

The important main lines connecting Geneva with Zurich and Basle, both *via* Lausanne—Berne and *via* Neuchatel—Biel, have seen similar improvements of service during the war. The lightweight high-speed trains between Geneva and Zurich have increased from three to five in number in each direction, and, although by reason of considerable additions to the composition of these trains the average overall times of this fast service have gone up from 3 hr. 22 min. to 3 hr. 46 min. for the 179 miles, 20 express trains now operate daily between Geneva and Zurich in precisely the same average time of 4 hr. 13 min. as 13 expresses only in 1939. In assessing the speeds of these services, regard must be paid to the heavy gradients of the Swiss main lines, as well as to the constant curvature that restrains high speed even on the favourable sections. Between Lausanne and Berne, for example, the eastbound trains must climb for 10 miles at 1 in 55, while on the Gotthard route southbound expresses have to negotiate a continuous 18 miles at 1 in 45 to the Gotthard Tunnel, and those in the northbound direction must be lifted a total of 4,375 ft. between Chiasso and Arth-Goldau. In such conditions as those last-mentioned, to maintain a running average, inclusive of stops, of all but 40 m.p.h. between Arth-Goldau and Chiasso, as is done by the best trains, is most creditable, and considerably exceeds any speeds attainable by road transport between the same points. Electrification during the war has substantially increased the speeds over certain Swiss routes. Of this the most striking example is given by the Furka-Oberalp Railway, with its two summits of 7,100 and 6,720 ft. above sea level. The quickest time of 4 hr. 42 min. between Brigue and Disentis in 1939 has come down to 3 hr. 50 min. in 1945, and the average of 5 hr. 3 min. by all trains on the summer service to 4 hr. 18 min., a gain of 45 min. Over the Brünig line between Lucerne and Interlaken there are still 17 daily through trains in all since electrification, but, whereas with steam the average journey time was 3 hr. 3 min., with electricity it has been reduced to 2 hr. 39 min.; also, four fast trains occupied an average of 2 hr. 24 min. in 1939, but today seven fast trains are run in an average time of 2 hr. 9 min. Both the Furka-Oberalp and Brünig Railways are metre-gauge lines which are carried over their summit levels with rack-and-pinion assistance. The new Brünig rolling stock is briefly described and illustrated this week, page 70.

During the war there has been a considerable increase in the use of restaurant cars in Switzerland. For example, over the Gotthard route 8 restaurant car trains daily in each direction in 1945 compare with 6 only in 1939. Practically all the fast trains on the Geneva—Berne—Zurich service incorporate refreshment accommodation, either full restaurant service, or, more especially in the lightweight trains, a buffet-bar. Various relatively minor routes now have regular restaurant car trains, such as that between St. Gallen and Arth-Goldau *via* the Ricken tunnel and Rapperswil (connecting north-eastern and southern Switzerland); there were no restaurant cars over this route before the war, but now there are four in each direction daily. All the metre-gauge lines of the Rhætian system today see restaurant car trains daily in summer; and though the restaurant car of earlier years has been withdrawn from the Bernina line, where it mounted to the 7,400-ft. summit at Bernina Hospice over adhesion-worked 1 in 14 grades, an even more remarkable feat is now achieved by the prolongation of the Chur—Disentis restaurant car service over the 6,720-ft. Oberalp pass summit to Andermatt and back by rack-and-pinion equipped gradients as steep as 1 in 9—probably a world's record of its kind.

* * * *

The Railway Mania

GLADSTONE in February, 1844, predicted a large increase in railway promotion; events in 1845 proved him correct, for no fewer that 240 railway Bills were presented for Parliamentary consideration. Only half were approved, of which 94 were for new lines with a total mileage of 2,816. That the Railway Mania had begun is shown when this figure is set against the 3,524 miles authorised during the quarter of a century from 1821 (when the Stockton & Darlington Railway was sanctioned) to 1844. In England, the principal industrial areas had been provided for largely in previous schemes, and thus the greater part of the 1845 mileage in England ran through tracts of country which were more or less sparsely populated. Scotland had lagged behind in the matter of railway promotion, and in 1845 trunk lines linking Carlisle, Glasgow, Edinburgh, Perth, and Aberdeen were sanctioned. Irish railways accounted for 13 Acts with a mileage of 645.

In the early part of the year Parliament had the assistance of reports on railway Bills from the special Board (known, after its Chairman, as Lord Dalhousie's Board), created by Gladstone's Select Committee in 1844 for the dual purposes of guiding the development of the railway system on national lines and of protecting investors from ill-founded schemes. Because of the jealousy of Parliament and the strong desire of the investing public to promote new lines, the Board's advice was ignored in some important cases, and in July the life of the Board was terminated. Without seeming to recognise its significance, Parliament had authorised the first large-scale railway amalgamation in 1844, in allowing three railways to combine and form the Midland Railway. The tendency to amalgamate in one form or other grew in 1845, for not only were three important fusions authorised (in one, the historic Liverpool & Manchester Railway was absorbed by the Grand Junction), but negotiations between companies led to the agreements under which the L.N.W.R. and the L. & Y.R. were formed in 1846 and in 1847 respectively.

The gauge question came prominently to the fore when Dalhousie's Board reported against certain broad-gauge proposals; eventually this led to Gauge Commissioners being appointed to pronounce upon future policy in this important

matter. These were the days of outstanding personalities in the railway world, and in 1845 George Hudson (the Railway King) again extended the boundaries of his territories, while Mark Huish, of the Grand Junction, showed promise of the fierce diplomacy that was to characterise the L.N.W.R. during the period of his management. The claims put forward for the Atmospheric system were discussed exhaustively during 1845, but final decision was left until the results of actual operation were available. Evidence that Parliament realised railway companies would be carriers over their lines, in contrast to the original conception of their being toll-takers only, was forthcoming in 1845 as it then became the practice to insert a combined "maximum rates clause" in railway Acts (these rates covered use of the line, provision of locomotive power and vehicles, and "conveyance"). To obviate repeating "certain provisions usually inserted in Acts authorising the making of railways," the Railways Clauses Consolidation Act (containing 165 clauses) was passed on May 8.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Railway Organisation

Cheltenham. July 12

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your correspondent in your issue of July 6 is tackling in his criticisms on the above subject something which I suggest does not need tackling at all. What is wrong with the present organisation of our railways? I suggest little or nothing at all. Ever since the grouping of railways came about great thought and consideration has been given to the question of organisation and not so very long ago, speaking or writing on the question of the Nationalisation of Railways, Sir Ralph Wedgwood declared that the railways are now magnificently and most efficiently organised. I submit that Sir Ralph Wedgwood knew what he was talking about. Is there really much difference in principle between the present organisations? I think not. There must of course be some, to meet the differences in conditions which exist such as the size of the railways and the vast differences which exist as to the nature of the business which has to be handled by each.

There does not appear to be very much difference in principle between the organisations of the L.M.S.R. and L.N.E.R., and in the case of the Southern and Great Western Railways, the former has a Chief Traffic Manager, whereas the latter has Superintendents and Goods Managers. The Great Western has huge industrial areas to contend with such as South Wales, the Bristol District, Birmingham and South Staffordshire, Birkenhead, Liverpool and Manchester, and it may well be that their organisation suits them better than the Southern organisation might do. As to the L.P.T.B., who would say that this vast concern is not well organised?

The Railway Clearing House brings together all the railways for the consideration of all matters of general and mutual interest and is extensively used for those purposes.

Finally, I suggest there is nothing, if anything, wrong with the organisation of the railways. Their grand work during the war seems abundantly to prove this and I do not think that even Euclid would attempt to prove anything to the contrary.

Your obedient servant,

ANOTHER CORRESPONDENT

Atmospheric Railway at the Royal Polytechnic

Hurstpierpoint, Sussex. June 25

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—One hundred years ago the railway mania was approaching rapidly its climax. The many railway papers were issuing supplements each week in an endeavour to find space for the growing number of lengthy advertisements of new railway projects seeking Parliamentary sanction. Railways proposed to be worked on the atmospheric system were numerous. Lines on Prosser's guide rail plan were not wanting. Because a railway worked by locomotives, between Y and Z was proposed by A, did not prevent a competing atmospheric line from Z to Y being projected by B, almost over the same route.

How largely the latter system appealed to those who dabbled in scientific matters can be gauged from the following advertisement in Herapath's Journal for June 14, 1845.

"Royal Polytechnic Institution Atmospheric railway daily at work carrying visitors. This interesting model is lectured on by Professor Bachoffner at one o'clock daily; also on the evenings of Wednesdays and Fridays at eight o'clock and on the evenings of Monday, Tuesday and Thursday at nine o'clock. The working of the model always follows the lecture. It is also worked at four o'clock and other convenient times. The other interesting works and popular lectures as usual. Admission one shilling; schools half price."

Thirty years or so later I call to mind that the Polytechnic was advertising a diving bell at work as its *piéce de resistance*. The institution lived up to its reputation.

Yours faithfully,

G. A. SEKON

Publications Received

British Pleasure Steamers. By Geoffrey Grimshaw. London: Richard Tilling, 106, Great Dover Street, S.E.1. 8¾ in. × 5½ in. 366 pp. Price 15s.—There were very considerable changes in the character of the pleasure steamer fleets in British waters, and in the concerns owning them, in the two decades between the World Wars. Particularly in the South of England, the owner operating trips based on a coastal resort, or even working a regular service between the Metropolis and the Thames Estuary, did not enjoy prosperity, partly as a result of changing habits and tastes, particularly in connection with the increasing use of road transport. Competition between fleets almost disappeared and the survivors developed to a noteworthy extent the added attaction of a cross-Channel excursion from the Thames and Medway. Though this book deals with so recent a chapter of shipping history, the author says that he has been hampered by a lack of reliable data, which is not surprising when some of the kaleidoscopic changes of ownership are borne in mind. Nevertheless, painstaking work has done much to repair the deficiency, and the author has the satisfaction of a job well done.

The volume also includes details of the more important, and only partly pleasure, fleets of the Clyde, Western Highlands, and Irish Channel, though strictly utilitarian services are left outside its scope. The work is based on the individual vessel, every one of which has its separate entry, giving brief details of history. The groups of ships are prefaced by notes on ownership. Appendix I gives fleet lists, with principal particulars; and Appendix II a tabulation of pleasure steamers in commission during the 1939 season. There are also a ship index and a list of illustrations.

The Early History of Transportation in Oregon. By Henry Villard, edited by Oswald Garrison Villard. The University of Oregon, Eugene, Oregon; printed at the University Press, 1944. 10 in. × 6¾ in. 100 pp. Cloth binding, $2; paper binding, $1.—The University of Oregon last year began the publication of a series of studies in history and bibliography, and Monograph No. 1 in History is the present volume. These publications are offered in exchange for the publications of learned societies, universities, and libraries. To all others they are sold at cost. Perhaps the most interesting feature of this volume is that it is the manuscript of an author who died as long ago as November 12, 1900, after an extraordinarily active career, who requested that the publication should be delayed for many years; it first appeared in print in 1926 in serial form in the columns of the Portland *Oregonian*.

Official duties made Henry Villard a frequent visitor to Oregon between 1874 and 1884, and again from 1887 to 1891. He played an outstanding part in the establishment and management of railway enterprises in that State, and his first-hand story in which he took great pains to be accurate in the compilation of facts, dates, and figures, is a work of lasting importance to the history of the State of Oregon, and of North American railways.

Photography in Engineering. By C. H. S. Tupholme. London: Faber & Faber Limited, and the Hyperion Press Limited, 24, Russell Square, W.C.1. 9½ in. × 7 in. 276 pp. Fully illustrated. Price 42s.—The extent to which photography is now used in engineering practice is not always appreciated. This book, which has 188 photographic reproductions and 73 line drawings, is a comprehensive guide to photography as applied to engineering and to industry. The camera is now used to simplify the work of the draughtsman; to provide a rapid and accurate analysis of raw materials; to serve as a guide in process control and to make records of high-speed machinery which afterwards can be studied at leisure. In aircraft and railway work the testing of materials is important, and the camera, in conjunction with the X-ray and gamma-ray, reveals hidden faults, and with the aid of infra-red, detects flaws invisible to the eye and to the ordinary photographic emulsion. The book also shows how the camera assists in determining metal treatment and the methods by which cinematography is used to provide instruction in machine assembly and for education in engineering and chemical processes.

The Scrap Heap

A collection in the Offices of the G.W.R. at Snow Hill Station, Birmingham, for the benefit of our merchant seamen, realised £3 1s., which has been sent to the Merchant Navy Comforts Service by Mr. A. V. R. Brown, the Divisional Superintendent.

* * *

TELEPHONE INQUIRY

M.O.W.T. : Is that *The Railway Gazette* ?

Duty Clerk : Yes.

M.O.W.T. : Will you put me through to your Library.

Duty Clerk : Sorry, we are closed on Saturdays. Perhaps you will ring up on Monday morning.

M.O.W.T. : This is the Ministry of Transport Library. What I want to know is that in your issue of June 22, p. 611, you mention about Questions and Answers of Main Line Railways. Could you tell me what it is all about ?

Duty Clerk : Just one moment while I get a copy of *The Railway Gazette*. Yes, I have it in front of me now. Well, it seems to me as though it is a review of the pamphlet issued by the British Main Line Railways Companies. There is a footnote saying so.

M.O.W.T. : Who are they ?

Duty Clerk : No idea, but it is apparently published by the British Main Line Railways of 22, Palace Chambers, S.W.1.

M.O.W.T. : Do you know their telephone number ?

Duty Clerk : No, but hold on and I will look in the telephone book.

M.O.W.T. : No, I will look. It does not seem to be under the Main Line Railway Companies.

Duty Clerk : Why not try British Main Line Railway Companies.

M.O.W.T. : Yes, I will try the British. I do not want to waste your time.

Duty Clerk : It is quite all right. If you will care to ring up our Mr. Cooke on Monday morning, he may be able to give you more information.

M.O.W.T. : Thank you very much.

Duty Clerk : Goodbye !

L.M.S.R. STILL O.H.M.S.

More than a million and a quarter troops (on duty and leave), evacuees, prisoners-of-war, and wounded, have been conveyed by the L.M.S.R. in 3,904 special trains since V.E. Day. These special trains travelled over half a million miles. In the same period, the L.M.S.R. ran no fewer than 3,221 special O.H.M.S. freight trains of equipment, munitions, petrol, and Forces mail. These freight trains ran a quarter of a million miles, hauling a hundred thousand wagons.

* * *

TRAVELLING IS TOUGH

Mr. Winston Churchill's bodyguard, Detective Inspector Walter H. Thompson, has resigned from his post, and from Scotland Yard Special Branch, after 31 years in the Force. He came out of retirement in 1940 to watch over the Premier, as he had done previously for eight and a half years. " At 58," Mr. Thompson said, " I am beginning to find that the life led by 71-years-old Mr. Churchill is a bit too strenuous. Except for Yalta, I went everywhere with Mr. Churchill. He is one of the most considerate men I've ever known, but he's such a terrific pace-maker, such a long-hour worker himself, that sometimes, perhaps, he forgets others may not have superhuman stamina."—*From "The Sunday Dispatch."*

* * *

100 YEARS AGO

From THE RAILWAY TIMES, *July* 19, 1845

MIDLAND RAILWAY.—At a Special General Meeting of the Proprietors of the Midland Railway, held at the Railway Station, Derby, on the 12th day of July, 1845,

GEORGE HUDSON, Esq., Chairman of the Board of Directors, in the chair,

It was resolved unanimously—

That this meeting approves of the agreement entered into by their Chairman, George Hudson, Esq., on behalf of the Midland Railway Company, in conjunct on with the York and North Midland, and the Newcastle and Darlington Junction Railway Companies, for leasing the Great North of England Railway, with power of purchasing the same on the terms proposed.

(Signed) GEORGE HUDSON,
Chairman of the Board of Directors,

Mr. Hudson having left the chair,

Resolved—That the cordial thanks of this meeting be given to the Chairman, and the Board of Directors, for their valuable services.

By order,
J. F. BELL, Secretary.

RAILWAY QUESTIONS AND ANSWERS

Statement : The Royal Commission on the Co-ordination & Development of Transport, which reported in 1931 declared : " In the days of their monopoly the railways had in some ways insufficiently studied the needs of the public, and their policy had become unduly conservative. The truth of the doctrine that facilities create traffic appears to have been forgotten." What, if anything, have the railways done to meet this criticism ? (Summary of paragraph 131 (pages 36 and 151) Final Report of the Royal Commission on Transport, 1931).

Answer : The Commission was, of course, referring to conditions prevailing during many years before 1914. During the last 25 years the doctrine that new facilities create new traffic has been the principle on which the companies have acted. When war broke out in 1939 the railways of this country were providing a combination of services for the transport of freight and passengers which had no equal anywhere else in the world. Instances of these are :—

Operating the world's longest non-stop runs. (393 miles in Summer, 299 all the year round).

The fastest run in the British Empire (71·9 m.p.h. for a distance of 188 miles).

Spent £450,000,000 on improving and renewing facilities between 1923 and 1939.

Point-to-point circular tour tickets.

Holiday season tickets (unlimited travel within a selected holiday area).

The most extensive range of cheap day tickets in the world.

Wide selection of half-day excursions and evening excursions by special trains at very cheap fares.

" Save to travel " cards for purchase of holiday travel by instalments. Series of specially equipped streamline trains to provide express services between London-Edinburgh, London-Newcastle-on-Tyne, London-Glasgow, etc.

The highest factor of safety in the world.

678 express freight trains operated on regular schedule every 24 hours.

Green Arrow and Blue Arrow services for registered packages.

50,000 special wagons for out-of-gauge and other special loads.

15,500 containers for shipping goods in bulk.

Door-to-door household removal services.

Distribution and marketing of traders' goods from railhead depots.

Warehouse facilities for traders.

Motor lorry services in rural areas operating from 2,822 railway stations.

Insurance of livestock in transit by rail.

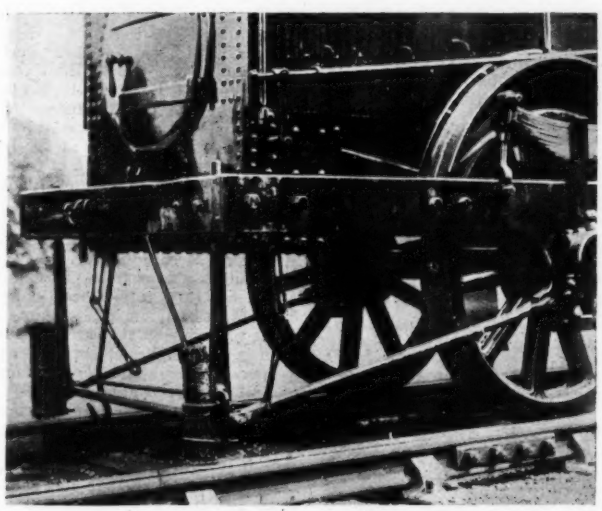
Special refrigerator services.

Facilities for bulk conveyance of liquids in road-rail tanks.

Extensive air services.

Interavailability of tickets between railway, road and air services.

—*From " Answers to Questions and Statements," issued by the British Main-Line Railway Companies, 22, Palace Chambers, London, S.W.1.*



Brushes fixed to the front of an old locomotive on the Antwerp-Ghent Railway to clear small obstructions from the line. The view was taken in 1925 at the time of the Stockton & Darlington Railway Centenary celebrations

* * *

" THE YELLOW MESS "

An envelope bearing the following address and enclosing a letter applying to the L.M.S.R. for sailing tickets from Eire

To Yellow Mess
Westmorland St.
Dublin

to England duly reached the Dublin office of the company. We are informed that the letter " promptly arrived at its correct destination."

* * *

TAILPIECE

(" *Waste not, want not* " *is still the cry*)

The Big Three meeting in Berlin
To set the world's affairs in order,
Will settle this and settle that,
Will soothe a quarrel, fix a border,
But not forgetting while they're at
These problems tough,
The Jap remains both numerous and rough.

Remember, too, when you recall
The Big Three meeting in Berlin
That time has lessened not at all
The value of the salvage bin.
One foe has ridden to his fall.
Then save today
To down the other in the selfsame way.

E. C.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Employment of Ex-Soldiers

More than 4,000 posts in the South African Railways & Harbours Service have been reserved for men at present on military service. These vacancies are additional to those filled by more than 3,000 soldiers discharged from the army since 1943. In addition, 14,000 railwaymen who were released by the department for active service will all be reabsorbed. The department has comprehensive training schemes for ex-soldiers selected for employment. Disabled soldiers will be given opportunities in jobs in which their disabilities will not be a handicap.

Orders for Equipment

The Minister of Transport, Mr. F. C. Sturrock, has stated recently that orders for railway equipment, not yet completed, involved the supply of 190 steam locomotives, 38 electric locomotives, and 2,900 goods wagons. The orders placed in Great Britain total £4,832,830, representing the cost of 190 steam locomotives, 10 electric locomotives, and 40 wagons. Orders placed in Canada amount to £1,579,000, representing the cost of 2,500 wagons. The Administration has already received 52 locomotives, and 68 more are expected before the end of the year. The number of wagons received is 2,740 and the remaining 160 are expected by the end of the year.

WESTERN AUSTRALIA

Safety Record

On the Western Australian Government Railways, last year, over 18,000,000 passenger journeys were recorded. Despite the hundreds of millions of passengers carried since the inception of the State Railways in 1879, there has not been any loss of life among paying travellers during that time.

Increased Accommodation at Perth

To provide increased accommodation for the Accounts & Audit Branch, a single-storied building is being erected adjacent to the existing Accounts Office in Bridge Street, Perth. The structure is of timber-frame design with fibrolite walls and saw-tooth roof to give adequate natural lighting; it will cover an area 102 ft. by 50 ft. A brick façade is being provided on the southern elevation facing Beaufort Street Bridge. The estimated cost is £5,000.

Financial Results

The Commissioner's quarterly report for the period ended March 31, 1945, shows the following results:—

	Three months to March 31		Nine months to March 31		
—	1945	1944	1945	1944	1943
	£	£	£	£	£
Earnings	1,069,000	1,114,400	3,288,100	3,324,500	3,363,400
Working expenses	927,634	907,353	2,782,833	2,843,504	2,539,462
Net revenue	141,366	207,047	505,267	480,996	823,938
Interest	261,800	259,300	784,400	776,600	772,700
Profit	—	—	—	—	51,238
Loss	120,434	52,253	279,133	295,604	—

The figures show a drop in earnings for both the quarter and nine monthly periods as compared with last year, indicating that the peak in the consistent rise over recent years has now been reached. The decrease in earnings for the quarter was common to both coaching and goods traffic. The volume of goods hauled and the ton-mileage were actually greater, but there was a decrease in the haulage of goods in the higher classes, and a big increase of lower freighted commodities, such as coal, hay, straw and chaff, wheat and fertilisers, which accounted for the apparent anomaly of lower earnings for increased tonnages. Working expenses were higher, because of the additional train mileage of goods traffic, and also to increases in staff and additional maintenance of rolling stock.

Train mileage run during the quarter totalled 1,577,714, an increase of 46,073 train miles compared with the corresponding period of 1944. Haulage of wheat, superphosphate, and so on accounted for a good deal of this increase, but haulage of water to dry areas for both public and departmental purposes, because of the abnormally dry season during the past year, has been a contributing factor to the increase. The earnings per train mile for the quarter totalled 162·62d., the working expenses 141·11d., and the loss per train mile, after allowing for working expenses and interest, 18·32d. The percentage of working expenses to earnings for the quarter was 86·78, and for the year to March 31 84·63, compared with 81·42 and 85·53 respectively for the corresponding periods of the preceding year. The net return on loan capital for the quarter was 2·16 and for the nine months to March 31, 2·58. The comparative figures for the previous year were 3·17 and 2·46 respectively.

UNITED STATES

Erie Reorganisation

One of the latest American railways to emerge from many years of adversity into a relatively strong financial position, through successful reorganisation, is the Erie Railroad. A little more than three years ago this company effected a drastic reorganisation, and since then, the first time for many years, it has been able to declare a dividend on its common stock. Now it has marketed with success an issue of $79,000,000, which was over-subscribed, and with its help the Erie will have succeeded in reducing its annual charges by no less than 66 per cent. since 1937.

Twin Dining-Car Units

In the Richmond shops of the Chesapeake & Ohio Railway some twin air-conditioned dining-car units have been converted from ordinary passenger coaching stock. The restaurant cars proper have been rebuilt from 79 ft. 3½ in. coaches, and, in comparison with normal American practice, which combines seating space and kitchen in one vehicle, are of unusual capacity. Other coach-baggage cars (the equivalent of third-class brakes in Great Britain) have been converted to kitchen-dormitory cars, each with a stainless-steel pantry and kitchen at the restaurant-car end, and, at the other end, two dormitories for stewards.

The purpose of these combination units is to secure more intensive use of the dining-car stock by providing sleeping accommodation for the staff, as on the longer runs in the western states. On the Chesapeake & Ohio, the twin sets will be used jointly by the "George Washington" express in one direction, and the "Fast Flying Virginian" in the other; they will be picked up by the latter at Clifton Forge at 4.40 a.m., and worked to Cincinnati, where they will be cleaned and provisioned for the return journey by the "George Washington."

ARGENTINA

National Transport Board

A Decree was approved recently by the Argentine Government relative to the administrative organisation of the National Transport Board. The Decree was issued under date of March 24, and was published in the *Bulletin* of the Ministry of Public Works of April 27, but the plan is not yet available. It is understood, however, that it does not really provide a redistribution of the administrative duties, but goes as far as establishing a fundamental modification of the entire system of organisation and control of railway services. The Decree stipulates that all the provisions of Laws Nos. 2873, 5315, 6320 and 6757 and complementary Laws, also the pertinent regulations which may be opposed to those of the Decree recently approved, are cancelled. The railway companies have been advised that all communications should be addressed to the National Transport Board instead of to the National Railway Board.

CUBA

The Seatrain Service

The Seatrain service, on which Cuba relies for the transport of an important percentage of its exports and imports of general cargo, has been transferred from the Habana-Port Everglades route to the Habana-New Orleans run, which will result in substantial freight savings to Cuban importers and exporters.

FRANCE

Pyrimont Viaduct Rebuilt

In July, 1944, the Forces de l'Intérieur demolished the twin 164-ft. central spans of Pyrimont viaduct on the Lyons-Geneva section of the National Railways, the up and down lines being carried by separate lattice spans. Both fell into the Vézéronce river below, one on top of the other, and came to rest with one end of each tilted up on the remaining stump of an old central pier. The contract for the rebuilding of the viaduct was let by the Chambéry divisional administration to the Ateliers de Constructions Mecaniques de Vevey, Switzerland, and work began in October last.

A temporary timber trestle pier, 99 ft. high, was built in mid-stream, and two spans of about 80 ft. were erected on it to form a single-line closure of the 164-ft. gap, one of these spans being the undamaged half of one of the original 164-ft. spans, and the other new. An erection gantry sufficiently high to reach from river level, and clear trains using the bridge, was used to remove the damaged girders and hold the half span (when it had been cut off) until the trestle was complete, in about three weeks. The half span was placed in position by the gantry and the new span launched from the other side of the gap and connected with the original half span. The viaduct was reopened for single-line working on May 5 last.

New 4-6-2 Locomotives, Southern Railway

Known as the "West Country" class, these engines form a smaller version of the "Merchant Navy" locomotives for routes west of Exeter

IN our March 14, 1941, issue we described and illustrated Mr. Bulleid's first "Pacific" locomotive for the Southern Railway, which formed the pioneer locomotive of the "Merchant Navy" class. Since then considerable experience has been gained with these somewhat unorthodox engines; and the satisfaction felt at their performance has been sufficient to warrant close adherence to the 1941 model in the new series now under construction.

Built primarily for work on the restricted routes west of Exeter, these "West Country" locomotives had to be made much lighter than the "Merchant Navy" class, to work over lines where even "Lord Nelson" and other heavy engines are not allowed. Nevertheless, they had to be built with a sufficient capacity to enable them to work either passenger or freight trains over any part of the main lines.

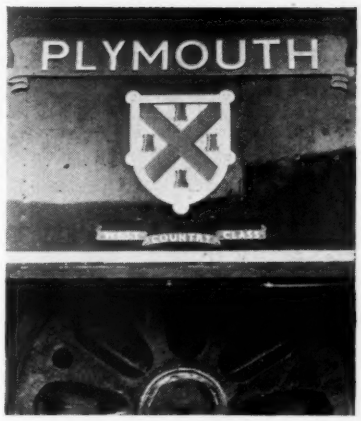
For reasons of lightness, as well as economy and simplicity, welding has played an important part in the building of these engines, as well as their tenders, as it did in the earlier "Merchant Navy" locomotives.

The following are the leading dimensions of the "West Country" locomotives, the first of which, No. 21C100, has appeared in the peace-time livery of malachite green with yellow lining :—

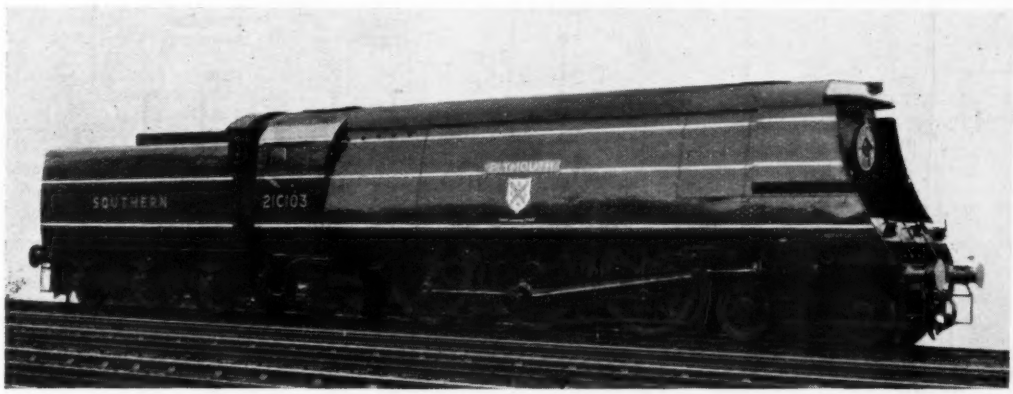
Cylinders (3), dia.	16½ in.
,, stroke	24 in.
Piston valves, dia.	10 in.
,, max. travel	6½ in.
Wheels, coupled, dia.	6 ft. 2 in.
,, leading bogie	3 ft. 1 in.
,, trailing truck	3 ft. 1 in.
Wheel-base, coupled	14 ft. 9in.
,, total, engine	35 ft. 6 in.
Boiler, dia., max. outside	6 ft. 3½ in.
,, length between tube plates	17 ft.
,, working pressure	280 lb. per sq. in.
,, centre from rail	9 ft. 7 5/32 in.
Heating surfaces :—	
Total evaporative (firebox, with 32 5½-in. flues and 112 2¼-in. tubes)	2,122 sq. ft.
Superheater	545 sq. ft.
Total combined	2,667 sq. ft.
Firebox volume	242 cu. ft.
Grate area	38·25 sq. ft.
Weight in working order :—	
Engine	86 tons 0 cwt.
Tender	42 tons 12 cwt.
Total weight of engine and tender in working order	128 tons 12 cwt.
Tractive effort at 85 per cent. boiler pressure	31,000 lb.
Water capacity of tender	4,500 gal.
Coal capacity of tender	5 tons

Many of the features which formed striking novelties in the "Merchant Navy" engines are perpetuated in the "West Country" class. Among these may be mentioned the air-smoothed external casing, the Bulleid patent valve gear, the "B.F.B." cast-steel driving-wheel centres, and the clasp brakes, as well as thermic syphons in the firebox and automatic lubrication of the motion. The cab, though slightly smaller, is also similar; it has the same kind of screens behind the driver's and fireman's

(*Concluded on page* 68)



Name plate of one of the locomotives, the "Plymouth," showing the city coat of arms



New 4-6-2 type "West Country" class locomotive, Southern Railway

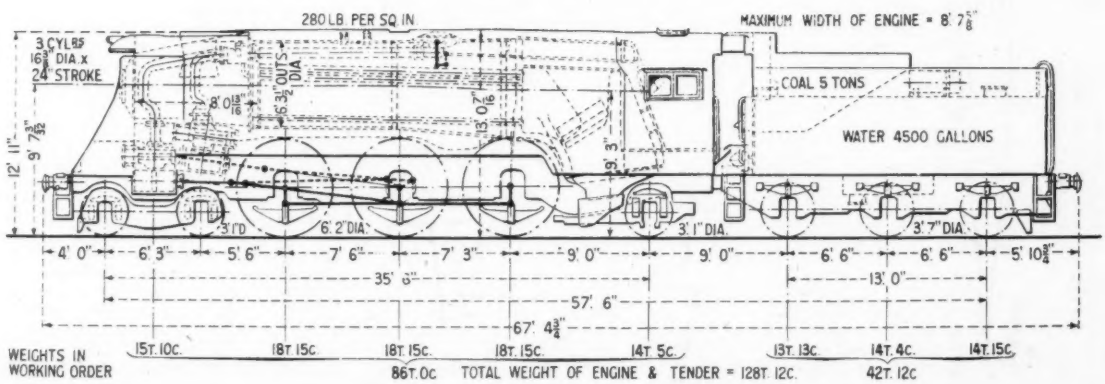


Diagram showing principal dimensions and weights

Fig. 1—Diagram of typical crossing loop with adjoining section

Fig. 2—Diagram showing circuits for section control

Single-Line Signalling and Relay Interlocking on the New South Wales Government Railways

The Cronulla branch is equipped with power signalling and single-line working controlled by relay interlocking

By W. F. Barton,
Signal & Telegraph Engineer, New South Wales Government Railways

IN the April 21, 1944, issue the signalling installed to serve a war factory in the Southern Area of the L.N.E.R. was described. It incorporated the operation of single lines without token working by the aid of electric interlocking controls effected through push-button apparatus. The following description of somewhat similar working, applied to the electrically worked single line between Sutherland and Cronulla, New South Wales, may prove of interest. Cronulla, the only surf bathing beach within 25 miles of Sydney served by train, is a popular resort, about 20 miles from that city, and the branch serving it is just over six miles long. It was opened in December, 1939, and is served by fast electric trains, operated at 1,500 volts d.c. from overhead contact wires. In spite of the war, traffic has continued to fill the line to capacity and the signalling arrangements have more than justified themselves.

Principal Features

An all-electric relay interlocking was installed at Sutherland. In addition to the junction with the single line to Cronulla, provision had to be made for a short section of single line into the Woronora cemetery, a facing refuge siding from the up main line to accommodate long goods trains, with outlet to the main line at the Sydney end, and refuge sidings for terminating electric trains, together with goods siding connections. The signalling provides for both-way traffic on all tracks within the area of the interlocking. Sutherland is a semi-terminal station for the electric suburban services from the city on the northern side, and a rail-motor service from the southern side. The double track passing through to the south coast as far as Nowra carries a very heavy steam passenger and goods train service. The control panel illustrated shows the Cronulla line branching off at the lower left-hand corner of the track diagram; the section track lights extend to the first crossing loop.

The layout at Cronulla shown in the illustration was specially designed to deal expeditiously with a heavy traffic. For this purpose, refuge sidings off the main line were provided, to accommodate two full-length electric trains, and a single platform of sufficient length to hold two trains, with an intermediate connection to permit of the arrival or departure of the rear train with the forward portion of the platform occupied. The loop was also designed to give access to the goods siding and to accommodate a train, the total capacity of the interlocking area thus being five full-length electric trains. The layout has proved most satisfactory, handling large crowds at holiday periods and at week-ends without a hitch. The control panel at Cronulla is installed in the stationmaster's office in the centre of the station building.

Crossing Loops

The traffic necessitated the provision of two crossing loops, Gymea and Caringbah, making three sections each a little over two miles long.

A diagram of a typical crossing loop, together with the adjoining section, is shown in Fig. 1. Provision is made for up and down working in the loop with home and starting signals only. The points are motor-operated, and, together with the signals, controlled from a small lever unit located in the booking office. The four levers or switchkeys conform to the Sutherland design, two only being in use. The centre of the panel is occupied by a Yale lock with a special contact barrel operated by the "closing key," withdrawn only when the station is closed.

The switch-keys work vertically, and have two operating positions, "up" and "down," the centre (horizontal) position is normal. No. 1 key in the "down" position controls the down home signal, SC17·05. In the "up" position it reverses the outlet points at the Sutherland end and clears the up starting signal, SC17·30. In a like manner, key No. 5 in the "down" position reverses the outlet points at the Cronulla end and clears the down starting signal SC17·41. In the "up" position this key controls the up home signal, SC17·54.

The track diagram carries not only the track lights, but signal repeaters, point lights, normal or reverse, and direction indicators which give the directions in which trains are moving in adjoining sections, as well as the acceptance indicators. It will be noted that the section on the right of the diagram is occupied by a train approaching the station; the fact that it is approaching, and not departing, is indicated by the illumination of the lamp immediately beneath the track light, which lamp is fitted with an arrow pointing in the direction in which the train is moving. The acceptance indicators referred to are to be seen on each side of the diagram, and are inscribed "up control" and "down control." They merely indicate when the station on that side has accepted for a train and the section is clear. When the station is unattended and the "closing key" has been withdrawn, a special departure switch on the platform is operated by the guards of trains to turn the points and clear the starting signal, provided acceptance has been received and track conditions are right for the train to enter the section. As the traffic was all-electric it was not necessary to provide catchpoints in the loop, as adequate braking distance was available from an intermediate train-stop located at the entering end of the platform. This train-stop clears when the starting signal ahead is clear or when an approaching train has reduced speed in accordance with the "caution" indication displayed by the home signal with the starting signal at "stop." Failure to observe the necessary speed restriction will keep the trip arm of the train-stop in the engaging position and the train will be tripped.

The Controlling Circuits

The through circuits for the control of opposing signals were made simple and straightforward, as simplicity was considered to be the first essential for safety. Between the two home signals at the ends of a section the controls were run on open line wires, while insulated wiring in standard trunking was used within the loops.

It will be seen from Fig. 2 that the open line wire section is isolated by means of transformers at each end, and the intermediate track circuit sections double switch the controls of both up and down signals. This renders the circuit practically immune to foreign current. The control circuit is self-explanatory and does not call for a detailed description, except, perhaps, in respect of the "approach stick" and "section group" relays. The approach stick is a standard relay employed for approach locking purposes in all relay interlockings. Fig. 3 shows the circuit used for this relay and from which it will be seen that a train-stop and/or a signal control having operated will drop the relay and should the approach tracks be occupied the relay will not pick up, even though both the train-stop and the signal are restored. Its application, therefore, in the through control circuits is two-fold. First, it proves the opposing signal and train-stop in the "stop" position, and secondly, approach locks this signal should a train approach with the signal clear, thereby preventing the starting signal from clearing at the opposite end of the section if any attempt is made to give preference to an opposing train.

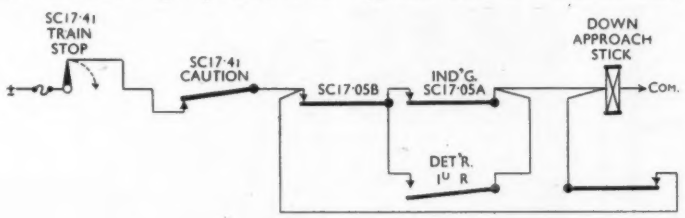


Fig. 3—Typical approach stick relay circuit

The section group relay, as the name implies, is a group relay including all track sections within the single line section. One such relay is located at each end, the two being in series and operated by a d.c. circuit superimposed over the up and down section control a.c. circuits. In this way track indications are available for both stations without additional line wires. This relay also serves, in conjunction with a direction stick relay, to operate the direction indicators.

Distant Indications

It will be noted that the 90 deg. or "lower green" control relay for the starting signal is a three-position a.c. relay. The "caution" relay for the home signal at the loop in advance acts as a pole changer for a double winding transformer, "X," in Fig. 2, which determines the direction in which the "lower green" relay is energised at the other end of the

section. This distant indication given in this way avoided the provision of additional distant or intermediate signals, which were not warranted for the traffic anticipated. (The signal aspects used on the N.S.W.G.R were dealt with in *The Railway Gazette* for August 8, 1941).

The relay equipment associated with the control panel is housed in a location opposite the station buildings. The wiring between the location and the panel is in parkway cable laid under the track and into the station office.

The double rail a.c. tracks have non-resonated impedance bonds and all relays used with internal control circuits are d.c., being supplied directly from selenium rectifiers. All relays with control circuits external to the location, with the exception of the section group relays, are a.c. Power is supplied from a 2,200 volt line through 5-k.v.a. 2,200/120 volt transformers. Emergency supply is available from local street lighting mains.

Three telephone channels are provided over the single line section as follows:—

(*a*) A train working circuit with telephones at the home signals and booking offices at Gymea and Caringbah, and the "accept" signals and signal-boxes at Sutherland and Cronulla;

(*b*) A telephone train control circuit from the main control centre at Central Station, Sydney, with selectively called telephones at each signal-box and the two crossing loops;

(*c*) A selective dialling circuit for inter-station working and for calling into the automatic exchange network of the metropolitan area.

Sutherland and Cronulla signal-boxes also have local yard circuits, and at Sutherland there are additional control and omnibus circuits.

The telephone switching panels into which these circuits are grouped at Sutherland and Cronulla can be clearly seen in the photographic illustrations.

All circuits, other than those selectively called, are equipped for centre-point ringing of Sutherland, and when this place is called a lamp glows above the switching lever for the circuit concerned. At the same time an audible warning is given by means of a bell, that may, at the option of the signalman, be switched to give a single stroke or a continuous ring. This panel at Sutherland is duplicated under the diagram, so that traffic officers can avail themselves of direct communication without interfering with the work of the signalman.

Apart from the point-motor mechanisms and train-stops, which are of the a.c. 110-volt type, and the a.c. relays used for track circuits, together with the insulated wires and cables, and telephones, the whole of the signalling equipment used in the installation was designed by the staff of the Signal and Telegraph Engineer, and manufactured in the Signalling Workshops at Chullora.

Recording Ticket Machine, L.N.E.R.

Experimental installation at Welwyn Garden City

Entering details on ticket

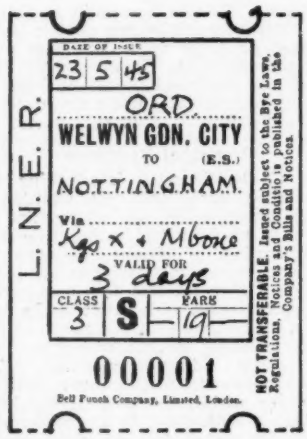
Releasing ticket from machine

TO obviate the delay occasioned by recording details on the ticket and in a register when issuing from stocks of blank cards, the L.N.E.R. has installed a Bellgraphic machine in the experimental ticket office at Welwyn Garden City, described and illustrated in our April 20 issue.

The machine, evolved after research and experiments carried out by the L.N.E.R. in conjunction with the maker, the Bell Punch Co. Ltd. of London, enables one kind of ticket only to be used for any class or description of ticket, so reducing considerably the stocks and storage space required. The machine simultaneously records details of all tickets for accountancy purposes at the time of issue.

The machine is mounted flush with the counter top and consists of two units; one holds single tickets, the other return tickets. On the tickets a red "herring-bone" protective background is printed within an inner rectangle. This is the inscribable area, visible and accessible through an opening at the top of the unit. The issuing clerk writes in the essential details on the ticket, namely, date, description (in accordance with a simple code), destination, route, validity, class, and fare. Within the machine, two recording paper strips are made, through carbons, into copies.

The passenger's ticket is ejected from the machine by pressure of a trigger-handle and is detached by the clerk. The first recording strip leaves the machine at the same time and falls continuously, concertina fashion, into a receptacle where it can be referred to in connection with the noting of the traffic debit. The second recording strip remains locked in the machine and is removed by the chief clerk at the end of the month for dispatch to the Revenue Accountant's Audit Office with the customary returns.

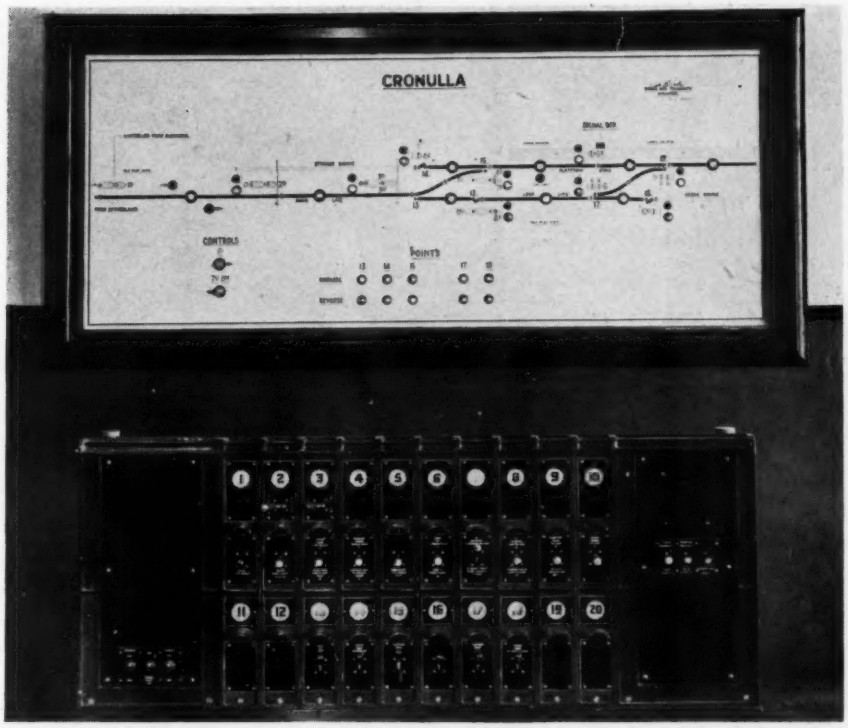


A specimen recorded ticket

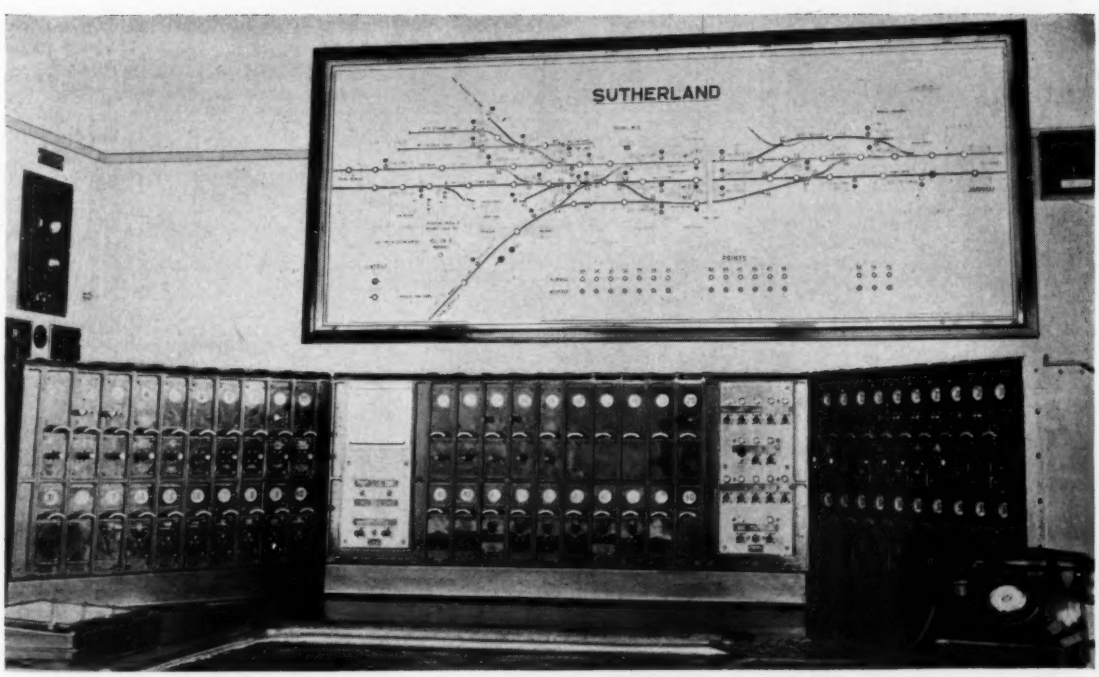
SYDNEY-NEWCASTLE ELECTRIFICATION PLAN.—The electrification of the Sydney to Newcastle line, at an estimated cost of £3,000,000, forms part of the New South Wales Government's first-priority works programme for after the war. In announcing this recently, the Acting Premier, Mr. Baddeley, said that other railway works would include the construction of a section of the Sydney underground railway to the eastern suburbs.

CONTROL OF BOLTS AND NUTS.—The Minister of Supply has made the Control of Bolts & Nuts (No. 8) Order, 1945, which revokes all previous control Orders for bolts, nuts, etc., and removes all restrictions on the acquisition and disposal of bolts, nuts, screws, screw studs, washers and rivets. The maximum-price provisions of the revoked Orders are remade in consolidated form. Copies of the new Order (S.R. & O. 1945, No. 815) may be obtained from H.M. Stationery Office, York House, Kingsway, W.C.2, or through any bookseller, price 2d. each.

Signalling Equipment on N.S.W.G.R.

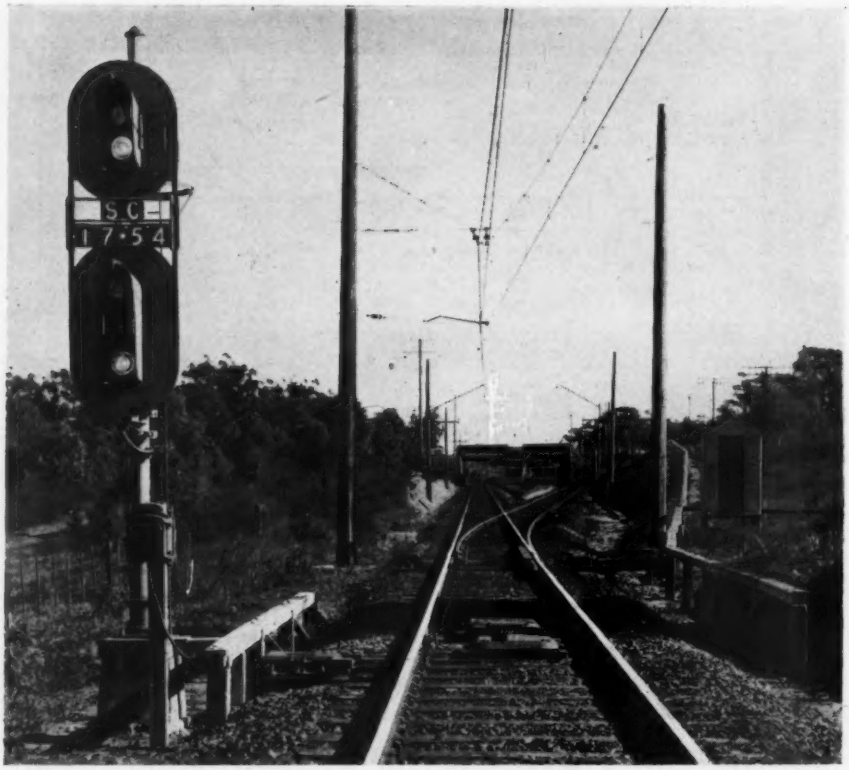


Apparatus in booking office at the control panel and track diagram at Cronulla

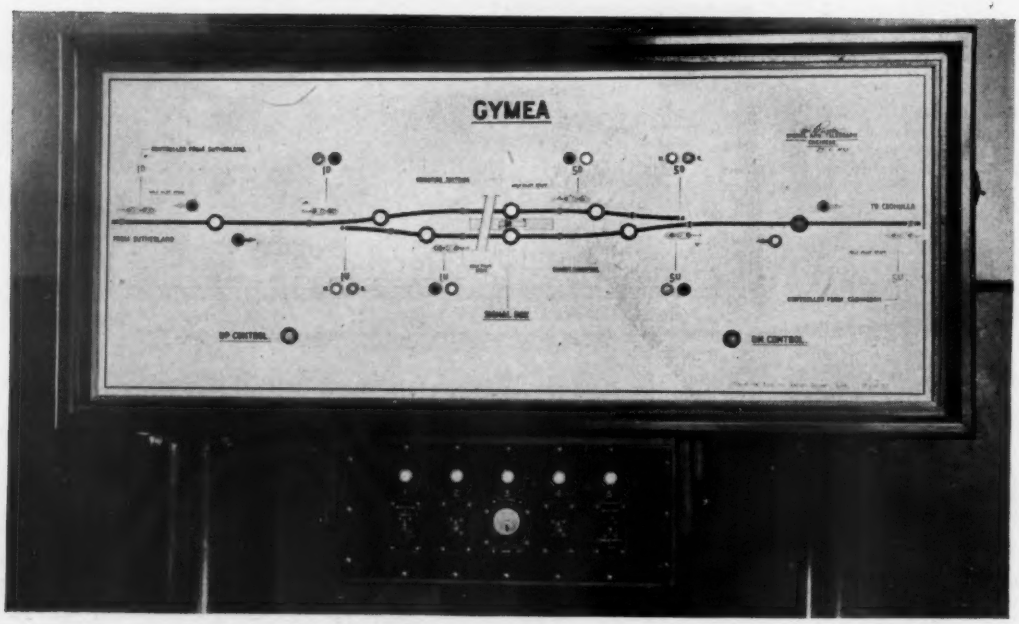


Relay interlocking equipment at Sutherland

Gymea Station Signalling, N.S.W.G.R.



Up home signal and points leading to Gymea Station



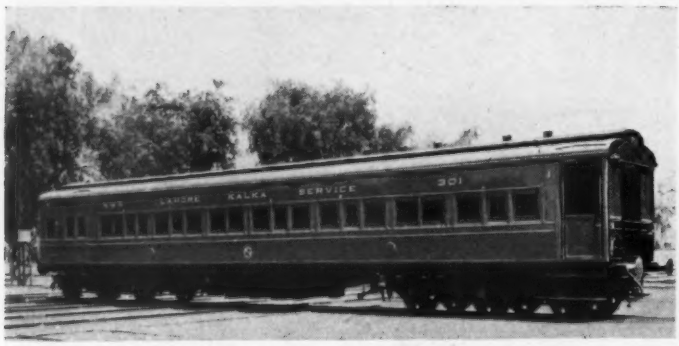
Apparatus in booking office at Gymea crossing station

Signalling Equipment at Cronulla, New South Wales Government Railways

Approach to Cronulla terminal, showing platform, loop, and storage siding connections. The fibre-cement trunking and relay huts are shown on the left

First Class Travel in India

Coaches from Viceregal train for first class travel on N.W.R.



One of the Viceregal coaches. Since this photograph was taken this coach has been diverted to the Delhi-Kalka service

SOME of the coaches of the Viceregal train were placed recently at the disposal of the travelling public on the North Western Railway. Four of the 12-wheel corridor coaches were put into service for first class travel, two for use on the Lahore—Karachi Mail trains, and two on the Delhi—Kalka route. Through the courtesy of Mr. H. Hinton Cooper, Chief Mechanical Engineer of the N.W.R., the following details are given. Minor alterations have been necessary to increase the accommodation and to suit the needs of the service to which they have been allotted, but the coaches have lost little of the comfort provided by their deep padded berths and the smooth running of the six-wheel bogies.

The side corridor, entered through a wide verandah at one end of the coach, has been retained. There are six compartments which provide sleeping accommodation for twelve passengers: there are four two-berth compartments, one three-berth and one single-berth compartment. At each end of the coach are two lavatories, and wash-basins are provided in all compartments, except the single-berth; there are two bathrooms and a separate compartment for the attendant. In the three-berth compartment there is a bunk which lowers over a comfortable arm-chair. Space did not permit the use of the usual side-tipping bunk, and the bed, therefore, is hinged at the end: when not in use, it folds away above the chair.

The panelling of polished teak, the soft pile carpet, the cut-glass shades on the electric lights, the ornamental door knobs and fastenings, and the luxurious springing have been retained for the benefit of the travelling public. The coaches, however, are not air-conditioned, but, it must be remembered, these coaches date back to close on a quarter of a century ago (several coaches of the train are considerably older than that) and air-conditioning had not been introduced when they were built. The immediate necessity has been to provide additional rolling stock on overcrowded trains. Until circumstances permit the building of more coaches, the use of these carriages undoubtedly will help to ease the situation on services where the number of passengers during the war constantly has exceeded the number of berths available. When Indian railways are free once more to invite their clientele to travel whether journeys be neecessary or not, air-conditioning will become universal for first class travel on all principal express trains.

Above: Inside the three-berth compartment showing the additional third bunk lowered over the armchair for night use

Right: The armchair for daytime use

New 4-6-2 Locomotives, Southern Railway

(*Concluded from page* 61)

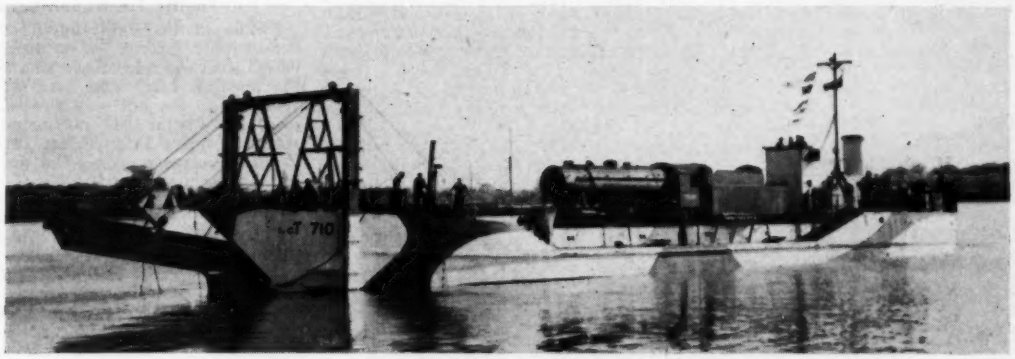
seats to prevent draught and to give a better view when running tender first. The controls, too, are so disposed that all the operations carried out by the driver can be performed from his side of the cab.

Like the "Merchant Navy" class, the new engines have turbo-generators which provide electric lighting for engine and tender code lamps, for the cab and gauges, and for the examination of engine parts by the staff in the running sheds. The fireman by means of a lever in the cab, can shake the firebars in the grate so that any clinker which has formed is broken up and any accumulation of ash is thereby dropped into the ashpan. An enclosed ashpan is fitted, this has necessitated the raising of the boiler barrel centre-line to 9 ft. 7⅛ in., the highest now in use in this country.

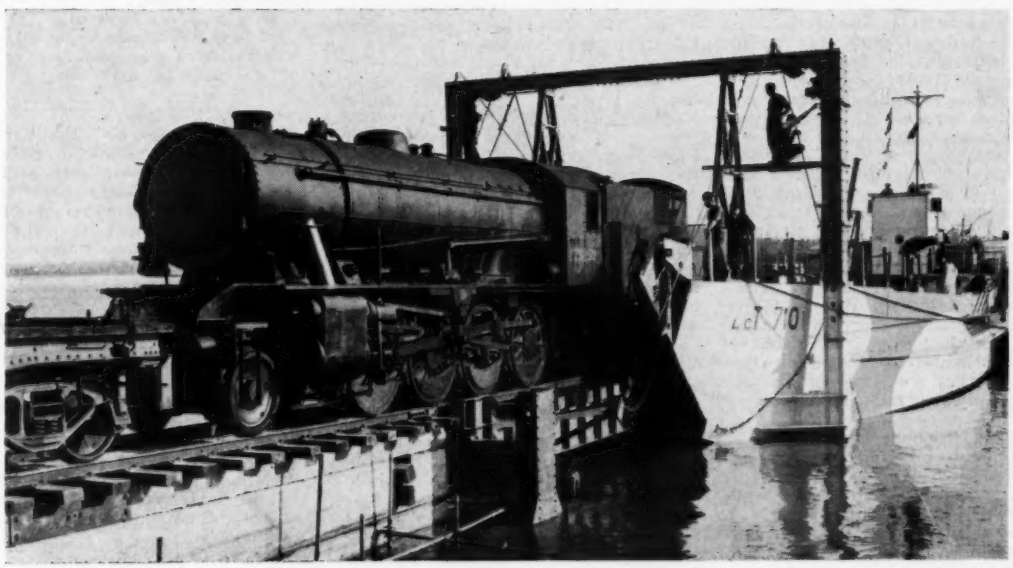
These locomotives are of no little importance, for they form in themselves one of the most ambitious building programmes for "Pacifics" ever undertaken in this country. No less than seventy of the new class are to be constructed, and a point of particular interest is the company's declared intention of using them for both passenger and freight services. This is in accord with recent trends which we have observed in the U.S.A., where the present-day operating conditions favour the use of a locomotive that can be attached either to passenger or to freight trains as desired, instead of several different types, each of which can be used only on certain classes of traffic. It is, in effect, the extension of the mixed-traffic locomotive, built larger than usual, to cover every kind of demand for main-line haulage.

Ferrying Locomotives and the Continental Invasion

(See news article on page 76)

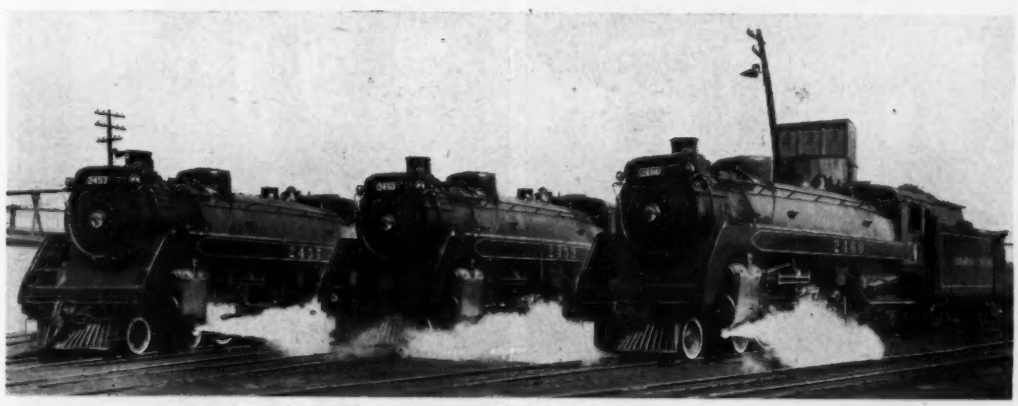


Tank-landing craft No. 710, adapted as a train ferry, with a locomotive aboard



A 2-8-0 locomotive leaving a specially-adapted tank-landing craft

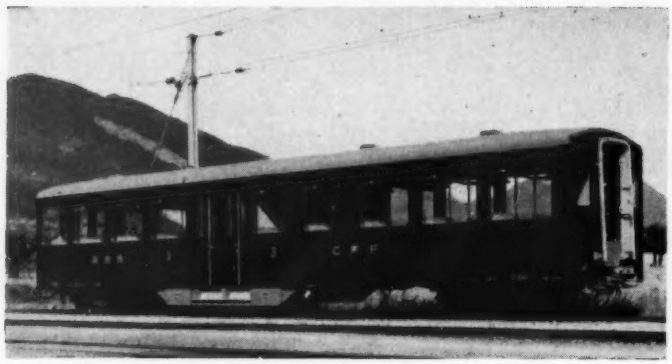
New Pacific Locomotives on the Canadian Pacific Railway



Three of an order for 45 Pacific locomotives built for the Canadian Pacific Railway Company, 10 of which were built by the Canadian Locomotive Company. Pistons with flame-hardened grooves are incorporated in the design for the first time in Canada. (See editorial note on page 55)

Narrow-Gauge Coaches in Switzerland

Lightweight rolling stock for the electrified Brünig line



THE only metre-gauge line of the Swiss Federal Railways, connecting Lucerne with Interlaken over the Brünig pass, was electrified in 1941-1942 and improved in other respects to permit higher speeds and more frequent services. Orders were also placed for new rolling stock, to permit further scrapping of old six-wheel coaches: three of the new vehicles have been placed in service recently. A press trip was organised on this occasion; the party travelled from Lucerne to Interlaken and back in a special train of the new coaches and were entertained to lunch at Brünig by the Federal Railways, which were represented by Dr. Wanner (Secretary-General) and M. Lucchini (General Manager of the Second Division at Lucerne). Members of the firms which built the coaches and representatives of connecting private railways also were present.

The coaches were built by the Neuhausen Industrial Company, with the co-operation of the S.A. Industrie de l'Aluminium, Lausanne, and are part of an order for 27 vehicles comprising three composite first and second classes, two second class, four second and third classes, and eighteen third class; the remainder should be in service in the course of next year. They are generally similar in design and construction to the lightweight main-line coaches of the Federal Railways, but are entirely of aluminium alloy, including bogies and parts, with a resulting reduction in weight of 20 per cent. compared with the previous bogie stock—itself of comparatively light construction—although seating more passengers. The limit of three coaches for a single-headed train over the rack sections has been raised to four for this type of coach, and the improved braking system designed by the Ateliers des Charmilles, Geneva, permits of a higher speed when descending the rack inclines.

Instead of the open-end platforms and entrances of the previous Brünig types, the lightweight coaches have double entrances in the centre, with folding doors, and vestibule connections between cars. They are 11·8 metres (38 ft. 8½ in.) in length and the tare weight is 12·5 *tonnes* for third class and 13·2 *tonnes* for the composite coach; the seating accommodation of the vehicles is 68 and 51 respectively.

Traffic Improvements

Traffic on the Brünig line has increased considerably in recent years; the number of passengers carried has risen from 150,000 in the opening year, 1889, and 519,000 in 1903, when the line was nationalised, to over 2,000,000 in 1944, not including local traffic between intermediate stations or solely military trains. The route therefore has been equipped to handle frequent services on faster schedules and has been relaid throughout. All stations and crossing loops now are equipped completely with colour-light home and distant signals and electrically-worked points. A final improvement, projected under a scheme of new works for unemployment relief, is the elimination of reversal at Meiringen by building a new approach from the direction of Brünig to the east end of the station. The electrification of the Lucerne-Meiringen section of the metre-gauge Brünig line was completed in 1941 and the level section from Meiringen to Interlaken was converted subsequently as reported in our February 20, 1942, issue.

ELECTRIFICATION OF A FEDERAL LINE IN SWITZERLAND.—The work of conversion of the Yverdon—Payerne section (about 17 miles) of the standard-gauge Yverdon—Fribourg line (about 30 miles) of the Swiss Federal Railways is in its final stages. It is reported that electric traction may be introduced over this section shortly.

METROPOLITAN - VICKERS £1,000,000 ELECTRIC EQUIPMENT FOR BRAZIL.—An order for £1,000,000-worth of electric traction equipment has been placed by the Central Railway of Brazil with the Metropolitan-Vickers Electrical Co. Ltd. All rotating machinery, including motors and motive-power equipment, will be made at the company's Sheffield works. Control gear will be made at Trafford Park, and coaches included in the order will be built by the Metropolitan-Cammell Carriage & Wagon Co. Ltd. at Birmingham.

A first class coach with upholstered seats *Third class coach with wooden-slat seats*

Interior views of the lightweight narrow-gauge coaches on the Brünig line in Switzerland

RAILWAY NEWS SECTION

PERSONAL

INDIAN RAILWAY STAFF CHANGES

Sir Lakshmipati Misra, Member, Engineering, Railway Board, has been appointed to officiate as Chief Commissioner of Railways, in place of Sir Arthur Griffin, O.B.E., on leave.

Khan Bahadur Z. H. Khan has been appointed to officiate as Member, Staff, Railway Board, in place of Colonel H. W. Wagstaff, C.S.I., M.C., formerly R.E., granted leave.

The directors of the Midland Bank Limited announce that the Earl of Feversham has been elected to the board and to the board of the Midland Bank Executor & Trustee Co. Ltd.

Mr. J. B. Chifley, the new Prime Minister of Australia, was at one time a locomotive driver in the service of the New South Wales Government Railways.

The following appointments to the board of directors have been made by the Westinghouse Brake & Signal Co. Ltd.:—Mr. E. J. Fouracre, Sales Manager, and Mr. D. F. Brown, Assistant to Managing Director.

L.N.E.R. APPOINTMENTS

Mr. E. J. Vipond, Principal Assistant (Operating), Central Traffic Office, Marylebone, has been appointed District Superintendent, York.

Mr. Vipond will be succeeded at the Central Traffic Office by Mr. C. J. H. Selfe, Trains Assistant to Superintendent & Locomotive Running Superintendent (Scottish Area).

Mr. J. H. Aston, of Tube Investments Limited, has resigned from the board of Stewarts and Lloyds Limited. Mr. P. G. Carew, also of Tube Investments Limited, has been appointed a Director of Stewarts and Lloyds Limited, in place of Mr. Aston.

We regret to record the death on July 11, at the age of 76, of Sir Bernard Edward Halsey Bircham, G.C.V.O., Solicitor & Parliamentary Agent, Senior Partner in the firm of Bircham & Company, which has acted for the former London & South Western Railway and other railways, and the London Passenger Transport Board.

RAILWAY ASSESSMENT AUTHORITY

Sir Joshua Scholefield, K.C., who has been Chairman of the Railway Assessment Authority since it was constituted in 1930, on the expiration of his present term of office has been re-appointed by the Lord Chancellor.

Mr. A. E. Joll, the Clerk of the Authority since its inception, has been granted leave of absence to take up the post of Director of Housing in the Control Commission for Germany (British Element), and will be leaving this country shortly. In his absence Mr. F. L. Bristow, P.A.S.I., the Authority's Chief Assistant, will be Acting Clerk.

Mr. H. E. Roberts, District Passenger Manager, London, L.M.S.R., who, as recorded in our July 6 issue, is retiring on August 21, entered the Head Office of the Lancashire & Yorkshire Railway at Manchester in 1902, and was appointed Goods Agent, successively, at Nelson and Bury in 1910 and 1913. During the last war he served from early in 1915 until 1918, latterly with the rank of Major, and as Deputy Assistant Director of Railway Transportation. In 1920 Mr. Roberts was appointed Assistant District Goods Manager, Bolton, and he was promoted to be District Goods Manager, Derby, L.M.S.R., in 1931. Under the reorganisation scheme of the next year that post was absorbed in the new appointment of District Goods & Passenger Manager, Derby, which he held until his appointment in June, 1935, as District Passenger Manager, London. He is an Officer of the Order of St. John of Jerusalem, and during the present war has held the rank of Colonel in the Home Guard. In 1941 Mr. Roberts visited the U.S.A., representing the Railway Executive Committee, to advise on the loading of cargoes for Great Britain, with reference to their destinations in this country. He is a keen angler and has three times fished for England.

Mr. H. E. Roberts

District Passenger Manager, London, L.M.S.R., 1935-45

Mr. M. A. Fiennes has resigned from the Brush Electrical Engineering Co. Ltd., to become Managing Director of the Davy & United Engineering Co. Ltd.

Mr. D. B. Hoseason, M.I.Mech.E., M.I.E.E., will be the Director responsible for the turbine division of the Brush Electrical Engineering Co. Ltd. and will remain responsible for the electrical division. He also has been appointed Assistant Managing Director.

We regret to record the death on July 11, at the age of 65, of General Sir Hugh Elles, K.C.B., K.C.M.G., K.C.V.O., D.S.O., Colonel Commandant of the Royal Tank Regiment and of the Royal Engineers, who was a Director of the Pressed Steel Co. Ltd. and Société Financière de Transports et d'Entreprises Industrielles (Sofina).

Mr. Percy E. Marmion and Mr. W. S. Grossmith have been elected Directors of Millars' Timber & Trading Co. Ltd.

Captain R. C. Petter has resigned from the board of Associated British Engineering Limited.

COLONIAL RAILWAY APPOINTMENTS

Mr. T. E. Jansz, Divisional Transportation Superintendent, Anuradhapura, Ceylon Government Railway, has been appointed Divisional Transportation Superintendent, Colombo.

Mr. H. R. Gunawardene has been appointed Divisional Transportation Superintendent, Anuradhapura.

Mr. Alexander George Walkden (General Secretary, Railway Clerks' Association, 1906-36), who received a Barony on the occasion of the Dissolution of Parliament, has taken the title of Baron Walkden, of Great Bookham in the County of Surrey.

At a recent meeting of the council of the Institute of Fuel, Dr. E. W. Smith was elected President of the Institute for the year ending October, 1946. This will be his third year of office. At the same meeting, Mr. J. F. Ronca, Member of Council, was elected Honorary Secretary of the Institute.

The Minister of Aircraft Production has agreed to release Mr. E. M. Fraser, Director-General of Aircraft Production since 1943, from his official duties. Mr. Fraser, who was South Eastern Divisional Manager, Imperial Chemical Industries Limited, placed his services at the disposal of the Government shortly before the outbreak of war.

Mr. George Herbert Anderson Wood, lately Financial Adviser & Chief Accounts Officer, North Western Railway, India, who has been appointed Director, Railway Audit, Government of India, Simla, was born at Loughton, Essex, in 1894. He was educated at St. Dunstan's College, Catford, and at Jesus College, Cambridge. At the outbreak of war in 1914 he joined the 20th Battalion of the London Territorials; two months later he transferred to the 18th Battalion (the Public Schools Battalion) of the Royal Fusiliers; and in the next May he received a commission. In October, 1915, he was in action at Gallipoli, and in January, 1916, he went to Mesopotamia.

During the fighting at Falayah near Kut-el-Amara he was wounded twice, in April, 1916, and in January, 1917. In April, 1919, he was invalided from the Army; later he returned to the E.B.R., as Deputy Chief Accounts Officer. In January, 1937, he was appointed Auditor of Accounts on the Jodhpur Railway. At the outbreak of

Mr. G. H. A. Wood

Appointed Director, Railway Audit, Government of India, Simla

two months later he landed in India and was posted as a probationer in what was then called the Indian Finance Department, at Ranchi. In January, 1921, he went to Madras as Assistant Accountant-General, and in October, 1922, he was transferred to the Currency Department in which he served in turn at Madras, Lahore and Calcutta. Mr. Wood became connected with railways in 1931, when he was posted as Deputy Chief Auditor on the Eastern Bengal Railway; in the next year he became Workshop Accounts Officer at Kanchrapara. In June, 1935, he went to Delhi as Deputy-Director in the Railway Clearing Accounts Office; but seven months war in 1939 Mr. Wood returned to Delhi, as Director of the Railway Clearing Accounts Office, which post he held until appointed Financial Adviser & Chief Accounts Officer, N.W.R., in May, 1941.

Mr. A. E. Moore, Audit Accountant, Southern Railway, who, as recorded in our July 6 issue, retired on June 30, had held that position since 1932. He entered the service of the London & North Western Railway in 1895 as a junior clerk in the Audit Office at Euston, and served under three successive Audit Accountants, Mr. John Partington, Mr. David Williams and Mr. Arthur Jones. In 1911 Mr. Moore transferred to the service of the London & South Western Railway for special work in the Audit Office at Waterloo under the Accountant, Mr. F. Hartnell, and in 1913 was appointed Audit Assistant to the succeeding Accountant, Mr. A. E. Newhook. During the period of the Government control of the railways in the war of 1914-18 Mr. Moore was an Investigator of railway companies' accounts and their claims against the Government. On the formation of the Southern Railway he was appointed one of the Assistant Audit Accountants under Mr. A. H. Bull, then Audit Accountant, whom he succeeded in 1932. Mr. Moore was Chairman of the Accountants Standing Committee from April, 1938, to March, 1939.

Mr. J. F. Harrison, Mechanical Engineer, Gorton, L.N.E.R., who, as recorded in our June 22 issue, has been appointed Mechanical Engineer, Scotland, was educated at Malvern Wells and Wellington College. He was a pupil of the late Sir Nigel Gresley at the Great Northern Railway workshops at Doncaster. Mr. Harrison was appointed Foreman at the Carr Locomotive Depot, Doncaster, in 1924; Foreman at London (Kings Cross) Locomotive Depot in 1925; Running Shed Foreman at Wigan in 1926; Technical Assistant, H.Q. Office of the Locomotive Running Superintendent, London, in 1929; Assistant to the Locomotive Works Manager, Chief Mechanical Engineer's Department, Gorton, in 1930; Assistant to Locomotive Works Manager, Chief Mechanical Engineer's Department, Doncaster, in 1937; and Locomotive Works Manager, Gorton, in 1938. He became Mechanical Engineer, Gorton, in 1941.

Mr. J. D. Lewis, M.C., A.M.I.Mech.E., M.I.Loco.E., A.M.Inst.T., who, as recorded in our July 13 issue, has been appointed General Manager of the Darlington Works of Robert Stephenson & Hawthorns Limited, commenced training as a mechanical engineer in 1919, as a pupil with the Alexandra (Newport & South Wales) Docks & Railway Company, and transferred to the Great Western Railway, Swindon. In 1925 he was appointed Assistant Locomotive & Carriage Superintendent, Burma Railways Co. Ltd.,

Mr. A. E. Moore

Audit Accountant, Southern Railway, 1932-45

Mr. J. F. Harrison

Appointed Mechanical Engineer, Scotland, L.N.E.R.

Mr. J. D. Lewis

Appointed General Manager, Darlington Works, Robert Stephenson & Hawthorns Limited

Rangoon, and later became District Locomotive & Carriage Superintendent, Burma (Government) Railways. He held a commission in the Railway Battalion Auxiliary Force, and in 1942 was embodied in the Burma Army. He won the Military Cross, and was severely wounded. At the time of his release from military service he held the rank of Lt.-Colonel.

L.P.T.B. Legal Department

Mr. A. H. Grainger has been appointed Solicitor to the London Passenger Transport Board.

Mr. C. G. Page will continue to act as Chief Legal Adviser to the Board, and Mr. R. McDonald as Chief Solicitor while continuing his duties as Director of Lands & Requisitioning at the Air Ministry.

The King, at Buckingham Palace on July 10, conferred the honour of Knighthood upon:—Mr. Thomas Arthur Eades, F.C.I.S., F.R.S.A., Managing Director, Automatic Telephone & Electric Co. Ltd.; Mr. John Watson Gibson, O.B.E., Director, Pauling & Co. Ltd.; Mr. Robert Letch, Regional Port Director, North Western Area, Ministry of War Transport; Mr. Reginald Edwin Robins, C.M.G., O.B.E., M.Inst.T., General Manager, Kenya & Uganda Railways & Harbours; and Mr. Clarence Thomas Albert Sadd, C.B.E., J.P., D.L., Vice-Chairman & Chief of the Executive, Midland Bank Limited. His Majesty's approval of these Knighthoods was signified on June 14.

L.N.E.R. Appointment

The L.N.E.R. announces that Mr. M. R. Bonavia, M.A., A.Inst.T., Manager of the Market Research Department, United Steel Companies Limited, Sheffield, has been appointed Assistant to the Chief General Manager (Public Liaison).

Mr. Bonavia was educated at St. Paul's School and Corpus Christi College, Cambridge. In 1931 he joined the Information Department of N. M. Rothschild & Sons, Merchant Bankers, and in 1936 was appointed Assistant Clerk of the Court, University of London. In the next year he became Maintenance Officer and in 1941 Acting Clerk of the Court. He was appointed Manager of the Market Research Department of the United Steel Companies Limited in 1943. Mr. Bonavia has written numerous articles and broadcast on various occasions on railway and transport matters, and is the author of "The Economics of Transport."

Presentation to Mr. G. Marshall

At a recent meeting in London of the L.N.E.R. Southern Area Goods Officers and Heads of Sections in the Goods Manager's Office, a presentation was made to Mr. G. Marshall, on his retirement from the position of Goods Manager, Southern Area, in token of the esteem in which he is held by the officers and staff who served under his direction. The presentation was made by Mr. D. M. Gracie, District Goods Manager, Sheffield, on behalf of those present and subscribers unable to be there. Mr. Gracie referred to the keen interest Mr. Marshall had taken in all the activities of the department and to the kindly consideration he had shown at all times to those under his control. Others also paid tribute to Mr. Marshall. In acknowledging the gift, Mr. Marshall expressed his appreciation of the friendly co-operation he had always received from the officers and staff of his department.

TRANSPORT SERVICES AND THE WAR—303

Troops and Bank Holiday Traffic

Troops will be permitted to travel on any day during the Bank Holiday weekend, as the restrictions previously imposed during Bank Holiday weekends have been cancelled.

Passenger Traffic in Holland

Passenger railway traffic began again in Southern Holland on July 9. Trains ran from Nijmegen and Venlo (near the German frontier) to the coast at Flushing.

Kehl Railway Bridge Reopened

The railway bridge over the Rhine between Strasbourg and Kehl has been repaired by French and American Military Engineers, and was reopened to traffic on July 8, according to the French radio.

Italo-Swiss Rail Traffic

According to a Reuters message from Zurich, dated July 10, a British commission has arrived in Switzerland for negotiations with the Swiss railway authorities regarding the re-opening of rail traffic between Switzerland and Italy.

Basle Reichsbahn Station

An unexpected hitch has occurred in connection with the taking over by the Swiss authorities of the station and other plant of the German Reichsbahn at Basle, as the French occupation authorities in the area of Germany adjoining Basle, and thus controlling that part of the Reichsbahn system which comprises also the Basle Reichsbahn Station, claim priority in controlling and managing this station. No solution has yet been found to this international complication.

German Railways in British Zone

An official report from 21st Army Group Headquarters of conditions in the British Occupied Zone of Germany at the beginning of July states that railway reconstruction has advanced so far that German State Railway officials have taken nominal charge of the Münster and Essen divisions. Traffic and reconstruction are under Allied direction, and an Anglo-American committee determines priorities. Civilians may use lines not needed for military purposes so long as supplies of locomotives, wagons, and coal are sufficient.

Railway communication between Brunswick, Celle, and Hamburg has been restored, and rail traffic between Brunswick and Hanover is expected to be resumed soon. The famous Bielefeld Viaduct is still in ruins, but local train services have been restored.

U.S.A. Travel Restrictions

There were some slight relaxations of the railway travel restrictions in the United States from May onwards. On May 9 the ban on horse-racing was lifted, and the Office of Defense Transportation suspended its previous Order O.D.T. 14A prohibiting the motor transport of racehorses and dogs, and the Interstate Commerce Commission's Order No. 271 prohibiting similar transport by rail. However, with the increased transport demands for returning troops, the conveyance of racehorses by rail or road carrier was again banned from July 12, until June 30, 1946. The use is still prohibited of special motorbuses or coaches to and from race tracks; the racing of motor vehicles, also, which was first prohibited on July 31, 1942, is still under the ban. Promoters of race meetings are under a pledge to do their utmost to minimise travel in connection with sporting events.

Some of the passenger train restrictions, based on occupation of seating space, have proved too severe. The Minneapolis & St. Louis Railroad, for example, was compelled in March to withdraw trains Nos. 17 and 18 between Fort Dodge, Iowa, and Winthrop, Minnesota, through lack of adequate patronage, but, as these trains provided the only passenger service over the 189-mile route concerned, the Office of Defense Transportation, on urgent representations from the communities affected, has permitted the railway company to reinstate them.

A Republican member of the House of Representatives introduced a resolution calling on the Director of the O.D.T. to exempt religious conventions and gatherings from the ban of the War Committee on Conventions on all travel to meetings of more than 50 persons, which has aroused a good deal of feeling in religious circles.

On the other hand, sleeping-car travel for distances of under 450 miles has been banned from July 15, thus releasing 895 Pullmans for military use. The Army plans to use 5,000 Pullmans because of the many troops arriving from Europe.

Troop Sleepers in U.S. Passenger Expresses

Troop sleeping cars are now being operated daily as part of the equipment of the well-known "Sunshine Specials," the principal trains of the Missouri Pacific and Texas & Pacific Railroads on the 1,358-mile run between St. Louis and El Paso, Texas. These three-tier 42-berth cars were first placed in service experimentally in January, 1945, for a 60-day trial, and are now to be continued indefinitely. Berths in these cars can be obtained only through Government reservation bureaux, by men travelling under Service direction, and the space is not available to the general public. As a result of the success of these cars, similar vehicles are now being run in trains 117 and 124, the "Rainbow Special," between Kansas City and Little Rock, Arkansas, a journey of 525 miles.

Canadian Sleeping-Car Cancellations

From June 15 most overnight sleeping car services in Canada were cancelled. It was announced by the Canadian Passenger Association that, as a result of a directive from the Transport Controller, priority on railway equipment was being given to movements of members of the Armed Forces. Sleeping car services affected in the eastern parts of Canada include those between Montreal and Quebec, Montreal and Toronto, Ottawa and Toronto, Montreal and Northern Ontario points, and Toronto and Northern Ontario points.

The dining car services also have been curtailed, and in some instances cancelled.

Limited sleeping-car accommodation continues to be available on long runs, such as Halifax-Montreal and Montreal-Vancouver, but one-night sleepers have been dropped from multi-night trains. For instance, the Montreal-Vancouver trains still carry through sleepers, but extra sleepers which in the past have been attached to run between specific points have been cancelled.

The Montreal-Ottawa-Toronto run comes in a special category, as Montreal-Toronto and Ottawa-Toronto night trains continue into the United States. In these cases, the sleeping-car accommodation is now limited to the through cars, which in most cases are American owned.

Institution of Locomotive Engineers Luncheon

The luncheon was held by the Institution of Locomotive Engineers at the Connaught Rooms, London, W.C.2, on July 13. Mr. W. S. Graff-Baker, President of the Institution, received the guests. Among those who accepted invitations to be present were :—

Messrs. N. Ablett; E. Adams; W. A. Agnew; L. B. Alexander; A. J. Allenby; H. H. Andrews; Major F. A. Angell; Messrs. A. Appleyard; J. Clubley Armstrong; G. Arnott; W. J. Ash; Captain E. S. Aslett; Colonel S. J. M. Auld.

Mr. H. H. C. Barton; Lt.-Colonel R. G. Bamford; Messrs. T. Barty; R. Baughan; W. Bayliss; J. E. Beckett; A. E. Beacham; A. J. Beedham; G. V. Beesley; S. F. Bennett; L. Bigg-Wither; Captain S. T. Binstead; Commander W. T. A. Bird, D.S.C., R.N. (ret.); Messrs. H. Bissell; G. A. Boex; P. W. Bollen; C. J. H. Bolton; R. C. Bond; Sir Leslie Boyce, K.B.E.; Messrs. A. J. Boyd; T. W. Bragg; A. G. E. Briggs; C. G. Brighton; G. C. Brinkworth; C. A. Brown; D. C. Brown; C. M. Browning; Sir C. Bruce-Gardner, Bt.; Lt.-Colonel R. Bucknall; Messrs. C. F. Bullard; O. V. S. Bulleid; N. Burke.

Mr. A. Campbell; Lt.-Colonel K. Cantlie; Messrs. N. J. C. Carling; J. Cave; Colonel A. C. Chester; Messrs. A. H. Chilton; H. Clark; J. Clayton, M.B.E.; C. F. Cleaver; C. M. Cock; F. H. Colebrook; Colonel G. Collingwood; Messrs. A. F. Collins; N. H. Cook; V. R. Bowen Cooke; B. W. C. Cooke; A. G. Corrie; B. J. Corrie; Lt.-Colonel C. G. Cotesworth; Messrs. H. R. Cotterill; H. P. R. Coveney; E. S. Cox; M. A. Crane; H. W. Crosthwait; R. Curl.

Messrs. A. C. C. Damant; C. F. Davey; A. S. Davidson; A. L. B. Dawson; J. F. Dawson; Damar Dawson; W. A. J. Day; F. O. Day; C. E. Dee; D. M. Denholm; S. R. Devlin; J. Dolby; V. H. Drewry; Sir John Duncanson.

Mr. R. F. W. Eardley; Colonel Easterbrook; Messrs. W. S. Edwards; J. S. Elliot; F. O. Ellis; R. Ellis; Evan Evans.

Messrs. C. N. Fairchild; A. C. Fall; W. D. Farrington; C. Fawcett; R. B. Fellows; D. P. Felton; J. A. Ferguson; L. N. Flatt, C.I.E., V.D.; J. Fleming; E. Fookes; R. E. Fordham; Captain A. G. Forsyth; Messrs. E. J. Fouracre; B. D. Fox; J. Fox; Lt.-Colonel C. Francis; Colonel W. Stuart Fraser, C.I.E., O.B.E., V.D.

Mr. J. R. Garner; Engr.-Cdr. H. V. Gaud, R.N. (ret.); Messrs. H. F. S. Gedge; A. J. Gibson; J. F. Gist; R. K. Glascodine, D.S.O.; R. T. Glascodine; J. N. Goldsby; A. W. Goldsack; W. M. Good; J. M. Goring; W. S. Graff-Baker; E. Graham; R. Graham; A. J. Grainger; T. R. Graty; E. W. Greaves; T. Greenwood; Lt.-Colonel H. Gresham; Messrs. J. H. Gresham; S. R. Gresham; Brigadier A. W. Griffin.

Messrs. J. Hadfield, M.B.E.; N. Haigh; R. H. Hamilton-Wickes; J. Hampson; E. W. Hanslip; Major H. A. Harrison; Messrs. Ranald J. Harvey; C. A. F. Hastilow; C. G. Hatherly, O.B.E.; H. J. Heagerty; Captain B. J. Hemple; Messrs. N. B. Henderson; D. H. Hewitt; F. A. Hewson; H. A. Hicks; C. W. C. Hine; M. C. Hives; H. Holcroft; W. G. Hornett; F. L. Howard; E. E. Howell; H. W. Huggins; J. W. Hughes.

Messrs. A. N. Jackson; A. E. Jenkins; N. Johnson.

Messrs. J. A. Kay; W. G. Kefford; W. Kelway-Bamber; H. G. Kerry; A. J. D. Kitson; C. F. Klapper; A. H. Kemp.

Messrs. A. Larman; H. Lawton; L. J. Le Clair; Colonel J. D. Lewis, M.C.; Messrs. R. H. Lee; Martin Lewis; K. M. L'Evine; Jean Levy; R. A. Lindsay; F. List; E. E. Lloyd; M. C. Lloyd; F. W. Lockwood; S. D. Loosen; M. D. Lowndes; L. Lynes.

Messrs. W. H. W. Maass; A. B. Macleod; J. P. Maitland, M.B.E.; Sir H. Osborne Mance, K.B.E., C.B., C.M.G.; Messrs. P. L. Mardis; R. E. Marks; P. E. Marmion; E. W. Marten; F. Mason; Commander H. M. E. Mathe; Messrs. A. S. Mathews; R. E. G. Mayhew; R. D. Metcalfe; S. Miall; Lt.-Colonel E. R. Mills; Messrs. N. H. Morris; F. Munns; Captain G. F. Munns.

Messrs. O. S. Naylor; R. Needham; R. E. Nelson.

Messrs. E. O'Brien; J. O'Connor; R. Officer; Sir John Oliver, K.B.E., C.B.; Mr. P M. Otway.

Messrs. B. W. Palmer; G. C. Parker; C. E. Parkes; J. J. C. Paterson, C.I.E.; E. C. Poultney, O.B.E.; F. Payne; S. J. Payne; K. R. Pearson; A. J. Peech; R. T. Pemberton; A. Perkins; Sir. James Pitkeathley; Messrs. F. A. Pope; T. Potter; G. Powell-Jones; F. D. Playford; B. W. Preston; E. Pugson.

Messrs. R. C. Rattray; V. P. Rawlings; H. P. Renwick; R. Renwick; A. A. Richards; H. W. H. Richards; R. A. Riddles, C.B.E.; J. L. Riordan; Captain E. A. Robinson, M.C.; Messrs. J. D. Rogers; G. Rollason; T. N. Rowe.

Messrs. D. W. Sanford; C. W. Saunders; H. H. Saunders, O.B.E.; Captain M. K. F. Saunders, M.C.; Mr. E. K. Scallan; Major E. I. Scott, M.C.; Colonel J. Sealy-Clarke; Messrs. W. J. Sedcole; E. W. Selby; Major M. P. Sells, O.B.E.; Messrs. J. H. Sharpe; G. H. Sheffield; D. Sheppy; G. S. Simmons; R. W. Sinclair; W. O. Skeat; C. L. M. Smith; R. T. Smith; S. G. Smith; A. H. Sommer; J. E. Spear; J. Spencer; B. G. Spink; F. L. Stafford; Sir Wm. A. Stanier, F.R.S.; Messrs. F. W. Still; H. J. Stone; Brigadier J. Storar, C.B.E.; Messrs. D. T. Strain; W. B. G. Swayne; N. W. Swinnerton.

Lt.-Commander E. Tarleton, R.N.; Major E. W. Taylerson; Messrs. A. R. Taylor; J. Taylor; J. W. Terry; F. Tipler; F. Theakston, O.B.E.; G. Thomas; R. Thomas; Lieut. A. Tonge; Messrs. G. A. R. Trimming, J. S. Tritton; G. Turbett; Major C. R. Turner; Sir George Turner, K.C.B.; Mr. T. Henry Turner.

Messrs. J. W. Vaughan, O.B.E.; J. F. B. Vidal, M.C.; Major J. W. Voelcker.

Messrs. R. B. Waddington; C. C. N. Wade; Major J. H. Waller, D.S.O.; Captain W. J. Wakley; Messrs. A. J. R. Walter; A. F. Walters; L. G. Walters; R. T. Warren; W. L. Watson, C.B.E.; M. Weiss; F. L. Welch; G. M. Wells; Brigadier Sir Bruce G. White, R.E., K.B.E.; Messrs. Colin R. White; I. Whittingham; M. Williams; W. Cyril Williams; H. Wilmot; A. Gordon Wilson; F. R. Wix; J. B. Woodman; J. M. D. Wrench, C.I.E; A. J. L. Winchester.

Mr. W. E. Yates.

Mr. J. Elliot, Deputy General Manager, Southern Railway, in proposing the toast of the Institution, said that it was a very good thing for General Managers and Deputy General Managers to meet their masters face to face. He noted that the Institution was proposing an open award and he intended to go in for it. He would design a locomotive himself. He had heard only the other day of a General Manager who had designed a locomotive and, moreover, the locomotive had worked. He had also heard, of course, of C.M.Es. who had known nothing about a new locomotive until it arrived in the traffic department.

When a new locomotive was brought out, most people would ask "How fast does it go?" He had learned to ask "Does it go?"

He had always felt that there was something sinister going on under the dome of the locomotive. He had never been able to find out what it was. It was a technical secret, and he was determined to elucidate the mystery, even if it meant taking the lid off one of the Southern Railway's new "West Country" class engines.

The Institution was in a very flourishing condition. It had over 1,700 members and he was told that its membership was both restricted and world-wide.

As the railways were going to take a large part in British aviation, he hoped personally that locomotive engineers would be able to help by bringing forward their experience of the design of engines, and interiors, and bodywork to aeroplanes.

Mr. Graff Baker thanked Mr. Elliot for the jovial manner in which he had proposed the toast of the Institution, and said that some might question why the luncheon was being held within twelve months of a previous similar function. The Council had been impelled to hold this occasion as some recognition of VE-Day. As individuals they considered that VE-Day had arrived, but officially the war was still going on.

The members of the Institution were 5½ or 6 years behind in the development of their equipment. There were difficulties of labour, with which all were familiar. They had to take part in the battle of reconstruction and development, with all too few troops, until some indefinite day in the future. There was no better body of men to win this war than those who are responsible for the mechanical engineering side of the railways—that was to say, those who were members of the Institution.

Mr. Evan Evans, Operating Manager (Railways), L.P.T.B., responding for the guests, said that if the wheels did not go round, what was the use of a railway? He was interested in the well-being of machines, as the better they worked, the easier was his job. The increasing interest which was being shown by the youth of this country in locomotives was evident. One had only to recall a letter which was printed in *The Railway Gazette* from some boys, asking a railway company to run locomotives of a particular kind on a certain route, so that they could have an opportunity of seeing them, to realise this. [Mr. Evans was referring to an item in the Scrap Heap page of our May 11, 1945, issue.] Between the wars many children had never been on a railway. He thought that this interest now being shown, was something that should be encouraged.

Mr. O. V. Bulleid, Chief Mechanical Engineer, Southern Railway, proposed the toast of the visitors in a brief speech, in which he said that this luncheon was really an occasion for having guests, and they were very fortunate in the number of guests that always attended functions of the Institution. To have the lunch without guests would not be very much. He knew that the Institution really did not exist to further technical developments of locomotive practice; it was purely an organisation for the meeting of friends.

PERSIAN RAILWAY RATES DOUBLED.—A decision to double the railway tariff on the main line between Teheran and the Persian Gulf has been taken by the Persian Cabinet in Teheran. The British Treasury paid more than a £ million sterling on behalf of the Allies to cover the difference between receipts and expenditure during the Allied control of the railway, which formed a vital link in the Persian supply route to Russia. These payments ceased on July 1 after the British and Americans returned the railway to the Persians.

On July 8, it was announced by the British War Office that, by the end of April last, supplies sent to Russia through the Persian Gulf amounted to more than 5,000,000 tons. The Persian and Iraq overland routes began in September, 1941, and in the early days all supplies were carried by the British.

American assistance was planned a year later, and by the spring of 1943 the Americans were playing a large part. Their huge contribution, and the work of British, Russian, Indian, Persian, Palestinian, and Iraqi troops ensured the establishment of the only overland route by which Russia could be supplied by the Western Allies.

The skill with which existing Persian roads, railways, and waterways were adapted won well-merited tributes for British Army engineers.

Ministry of War Transport Accident Report

Near Dale Lane, Kirkby, L.M.S.R. April 19, 1945

Colonel A. C. Trench inquired into the accident which occurred at about 9.37 a.m. on April 19, 1945, at the Dale Lane No. 1 signal box, near Kirkby, L.M.S.R., when the 6.15 a.m. express, Bradford to Liverpool (Exchange), consisting of 6 bogie coaches drawn by 4-6-0 locomotive No. 5210 and running at about 60 m.p.h. under clear signals, ran into an engine and brake standing on the main line just beyond the trailing points of the west fork line (see accompanying diagram). The west and east fork lines form the connection with the Kirkby factory sidings and the main-line junctions are both worked from the signal box mentioned. There was a thick morning mist and visibility was estimated at between 20 and 30 yd. but fogmen were not out, as it was expected to clear shortly. Double block was being worked.

The goods brake was reduced to matchwood and the engine ahead of it driven forward about 80 yd. and turned end for end. It came to rest leaning to the left and the express engine did so leaning to the right, with its leading bogie torn off and underneath the tender. The trailing corner of the last-named penetrated and crushed in the leading compartment of the leading coach, which was derailed all wheels, suffering a good deal of damage. Prompt measures were taken to obtain assistance. The drivers of both engines, two additional drivers travelling on the express engine to learn the road, and a shunter in the goods brake were killed; 19 passengers, the firemen of both engines and the woman guard of the passenger train—who first gave all the assistance she could to injured passengers—were taken to hospital and 30 passengers suffered minor injuries and shock.

Origin of the Collision

The regular signalman who should have come on duty and opened the signal box at 5.30 a.m., failed to do so; he had forgotten to set his alarm clock, and by 6.20 a.m. three workmen's trains for the Kirkby factory were held up at adjacent block posts, not only preventing the day shifts from getting there but the night shifts—which the trains were due to convey—from leaving. Another signalman—called the signalman throughout what follows—was travelling to open Kirkby Station box, situated nearly 1¼ mile west of Dale Lane No. 1, and learning the reason for the delay to his train communicated with the Manchester Control, saying that he had been in Dale Lane No. 1 for two days during his training and felt competent to work it. Delay in opening Kirkby box being comparatively unimportant, the Controller authorised the signalman to proceed accordingly. He did so and duly dealt with the waiting trains. At about 8.50 a.m. the engine and brake went over the east fork to the factory sidings and, after doing some shunting, came out again along the west fork to its starting signal, which is in rear of catch points leading to a sand drag. This signal carries no shunt-ahead arm below it and is itself electrically interlocked with the block indicator for the section ahead to Kirkby. When a shunt movement requires to pass it at danger it does so on instructions from the signalman. The engine and brake arrived at this signal at between 9.5 and 9.10 a.m.

The evidence tendered to Colonel Trench regarding the times of subsequent events was conflicting, but he formed the opinion that about 9.25 a.m. the guard in the brake saw that the points had been set for the movement to the main line. The guard said that his driver then moved forward on his own initiative but with his concurrence, stopped just clear of the points and blew two pops on his whistle. The engine and brake required to use the crossover to the up main line to reach some connections—not shown on the diagram—near the east fork junction; there is a ground signal by the west-fork junction controlling movements over this crossover. The guard maintained that before the movement he heard a whistle from the signalman and took this to be equivalent to a green flag as an indication to pass the starting signal at danger. He went to the signal box and signed the book at 9.30 a.m. The fireman, who was interviewed in hospital, thought they could see the signal box when standing at the signal and that he saw a flag waved from it, but could not identify its colour. Colonel Trench thinks however, considering other evidence as to the range of visibility, that his recollection was at fault on these points.

The signalman originally thought he had time to arrange the crossing movement and set the fork outlet points, it is estimated, at about 9.20 a.m. He

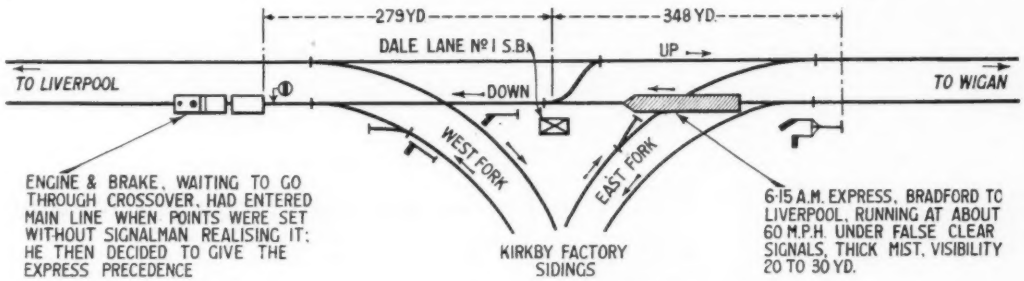
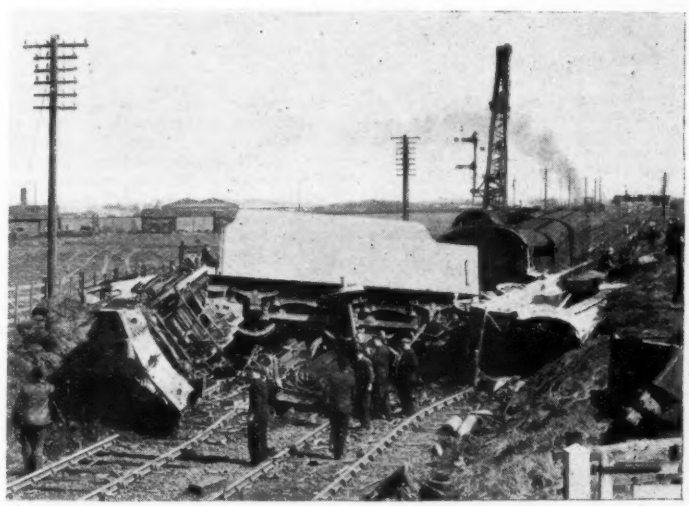


Diagram illustrating circumstances of collision at Dale Lane, Kirkby, L.M.S.R., April 19, 1945



A view of some of the damage resulting from the collision at Dale Lane, Kirkby

accepted the express 3 min. later with the east-fork facing-points reversed to provide the overrun, and later changed his mind regarding the engine and brake and reset the west fork road to normal, thinking they were still standing on the fork. He said that it was after doing this that he whistled and shouted to the guard to come to the box, that he might be told what it was proposed to do.

When the guard got to the box he found two welders and a flagman making tea preparatory to starting work when the mist cleared. Colonel Trench thinks there was no appreciable amount of conversation or other cause of distraction of the signalman from his duty, and that their presence had no bearing on the accident. There was some conflict of evidence as to what the guard and signalman said to each other. The former asserted that he said, "Did you whistle for me to drop down? We are over the points ready to set back," and received the reply, "Yes; all right." The signalman, however, maintained the guard's words to have been "Were you right for us before?" and that his answer was "Yes, but we will wait for the express now." The evidence of the other three men was generally to the effect that the guard said something like "What are you going to do with us?" and that the signalman replied substantially, "I cannot deal with you now; you must wait for the express." None of them heard any statement in so many words by the guard that his engine and brake were on the main line.

The guard said it occurred to him to remind the signalman to put a collar on the lever of the signal in rear, but later thought that Dale Lane No. 1 being a new box there was probably track circuit or similar protection; he therefore said nothing about that. He remained there for about 6 or 7 min., during which the signalman cleared his signals for the express, but it was not till it passed that he appreciated the position and said "We are standing on the down main."

Inspecting Officer's Conclusion

Apart from the failure of the regular man to come on duty at the appointed hour, the primary cause of the accident was the misunderstanding between the guard and the signalman, and a contributory cause was the latter's inexperience. Aged 19¾, he had been with the company 5½ years, with a good record, 4 years as booking boy and for the last year as temporary signalman. He had been about 6 months at Dale Lane No. 2 box, which controls the southern ends of the converging forks, and the same time at Kirkby. The two shifts when he had had experience of the No. 1 box, assisting the regular signalman, were during factory holidays when No. 2 box was closed; on those days therefore he had no experience of movements on the forks. For the misunderstanding the guard is held to be mainly responsible. He should have stated clearly that his engine and brake were on the down main and the signalman's mention of an express, of which there appears no doubt, should have aroused suspicion in his mind. He should have reminded the signalman to apply a lever collar and his excuse for not doing so cannot be accepted, for he claimed that he knew so little about a signal box as not to realise that the levers being pulled over as he waited were for the signals for the express on the main line. He failed to comply with Rule 55 earlier, when standing for 10 min. on the fork and should not have permitted his driver to move forward without more precise authorisation from the signalman than a somewhat problematic whistle in fog. Colonel Trench hesitates, however, to blame him too seriously, as the shifting of the points after some minutes waiting might to some extent be regarded as an indication that the signalman was ready for the movement. The guard, 41 years of age, a goods guard for 4 years, has a good record.

The signalman's failure originated in his change of mind and resetting of the points without making sure of the position of the engine and brake. It is sometimes unavoidable that a signalman should change his mind as to priority of movements, but it is then doubly necessary for him to assure himself, without any possibility of doubt, of the actual position of all movements concerned, above all in fog. He was not permitted, apart from this, by the signal box instructions, to accept the express and temporarily obtain overrun by reversing the east fork facing point. It would be unfair, however, to overlook the circumstances of his offer to help to keep traffic moving by opening the box, and there are no grounds for criticising the Controller's action in permitting him to do so.

Remarks

The justification for the provision of additional protective equipment at the west fork junction depends mainly on the frequency of movements eastbound from that point. The crossover was provided some 18 months later than the fork connections to the factory, in conjunction with works at the depot to which the engine and brake were proceeding. When the signalling was originally provided there was no prospect of such eastbound movements. They are very infrequent, but future traffic conditions to and from the factory are uncertain. A shunt ahead signal is now to be provided at the west fork starting signal and no hand signal will then be necessary to pass that signal at danger; there are also to be a telephone from the signal to the box and a short track circuit ahead of the junction points on the down main. Having regard to this decision Colonel Trench has no recommendation to make.

Train Ferries and the Continental Invasion

During the early planning for the invasion of the Continent it was realised that, as soon as the Allied Forces were established on the far shore, the railway communications behind the lines would need to be provided with locomotives and rolling stock, as any captured would be in no condition to satisfy our requirements. In consequence, a large programme was arranged for the manufacture of locomotives, wagons, ambulance trains, railway mobile workshops, etc. The task devolved on the Transportation Service, War Office, of arranging vessels for shipping such locomotives and rolling stock to France, and, as all existing train-ferry vessels had been converted to other uses since 1940, plans had to be made for their return to normal use.

It may be recalled that, during the 1914 war, the War Department decided on the use of train ferries to the Continent, and three vessels were built for a military service from Richborough. These vessels were taken over ultimately by the L.N.E.R. to operate a service between Harwich and the Continent. British resources in 1941 consisted of two of the three original vessels and three newer ships which had been built by the Southern Railway Company for its cross-Channel train-ferry service from Dover.

The main factors governing the re-establishment of a train ferry service were, first, that we could not expect to find the original terminal works on the French side left intact by the enemy, and, secondly, that the location of the French and home terminals did not suit invasion plans. It was decided, therefore, to equip the ships with special gear so that locomotives and rolling stock could be picked up and landed at any quay which was rail served or could be linked up quickly with a nearby railway system.

Designs for special stern gantry cranes to handle locomotives and other heavy lifts up to 84 tons for the Southern Railway "Twickenham Ferry" class steamers, and for special loading ramps for the L.N.E.R. vessels, were put in hand late in 1942. The fabrication of the structural steelwork and crane machinery proceeded during 1943. In this connection it may be recorded that the ships could not be fitted out with their new gear as it became ready, but had to remain in service until the last possible moment on urgent operational work. In the case of the Southern Railway vessels, it was not practicable to have them fitted with heavy-duty loading ramps, but, in addition to their cranes, they were to carry a lighter ramp to handle wagons, etc. The design produced for the L.N.E.R. vessels enabled everything to be shunted direct inboard.

Another problem which arose during planning was that it was found that, with combined British and U.S.A. resources on ferrying, it would be impossible to create the "build-up" required on the far shore. A suggestion was put forward by an American officer that L.S.Ts. could be converted to serve the dual purpose of carrying tanks or railway wagons. This was investigated thoroughly, and, on the scheme proving practicable, designs were prepared in the War Office for all the necessary conversion equipment, and manufacture was put in hand.

Both American and British L.S.Ts. (landing ships, tank) were converted as they became available; the work on the former was undertaken by U.S.A. technicians, and on the latter by Naval Dockyard personnel. The scheme was successful, and some 50 craft were fitted out. These transported upwards of 30,000 wagons and carriages to the Continent.

Concurrently with the need for modification of the ferry vessels was the necessity for new terminal facilities to be built at suitable locations on the South Coast which would not interfere with other shipping facilities. The War Office undertook the necessary reconnaissances and prepared designs for three sites. Construction work on these terminals was effected by Port Construction and Repair Companies, R.E., supplemented by Pioneer Corps Troops and Railway Construction Troops as required.

The terminal arrangements required for the L.S.Ts. were simple. It was necessary only to lay rolls into the "hards" which had been constructed for the loading of tanks, and connect to new holding sidings for the wagons, and provide railmounted ramps to run up and down the hards with the tides.

In the case of the "far shore" terminals nothing much could be done on the plan-

ning side, but the experience gained in Great Britain enabled certain basic requirements to be determined, which greatly expedited work when it came to be done at Cherbourg and elsewhere. Cherbourg was captured on June 26, 1944, and on July 29 the *Twickenham Ferry* delivered her first cargo of locomotives.

As the tide of war swept eastwards, further terminals were developed at Dieppe and Calais. It is worthy of note that the ferry dock at Dover, which came through the war unscathed, was in course of modification (to enable it to handle the converted vessels) while the last enemy shells were still falling in the area.

Although the main requirement had been met by the work described above, two further developments, which were investigated and carried through to completion, would have played their part had necessity arisen.

The first was a permanent bridge ramp for rapid handling of locomotives, etc. Experience in the use of the stern crane of the " Twickenham " class ferries showed that, had one been available, some form of heavy bridge would have greatly expedited the whole operation. Such a bridge was designed and installed at Southampton. Fortunately, the march of events was so rapid that, by the time successful trials of the bridge ramp had been completed, the main bulk of the task had been virtually completed and its installation on the Continent was no longer considered necessary.

The second development was the use of L.C.T. (landing craft, tank) for ferrying locomotives across rivers. It was considered that the time occupied in opening up railway communications on the east side of the Rhine might greatly retard military operations into Germany. As a form of insurance against delay in getting locomotives across the river by normal means, experiments were carried out on L.C.Ts. converted to meet the contingency. The L.C.Ts. were fitted with special spud fittings similar to those used on the pier-head pontoons of Mulberry ports, and a heavy ramp was fitted to the bows of the craft to permit the locomotives to be pushed straight on to the docks of the vessels from the shore railway link. Successful trials were conducted under conditions more difficult than normally would have been met in non-tidal rivers.

(*See illustrations on page* 69)

Permanent Way Institution Annual Summer Meeting

On Saturday, July 7, the annual summer general meeting of the Permanent Way Institution was held in the Institution of Civil Engineers, with the President, Mr. V. A. M. Robertson, C.B.E., M.C., in the chair. Members from many parts of the country attended including Past-Presidents, Messrs. Arthur R. Cooper, R. Carpmael, O.B.E., F. E. Harrison, O.B.E., and W. K. Wallace. Among others present were Messrs. G. B. Barton, J. I. Campbell, H. S. Davies, C. E. Dunton, B. P. Fletcher, C. W. King, W. A. Messer, E. Perfect, A. S. Quartermaine, R. C. Rattray, H. E. Roberts, T. H. Seaton, C. E. R. Sherrington, M. G. R. Smith, and J. C. L. Train.

The Secretary (Mr. H. Janes) reporting on the activities during the first half-year of 1945 stated that the meetings and visits of the various sections had further improved, both at home and in India and Sudan. Regarding membership, it was of interest to note that the elections for the five years 1940 to 1944 reached the remarkable total of 1,600, the numbers for each year being, 1940, 114; 1941, 210; 1942, 251; 1943, 474; 1944, 551. The membership now exceeded 4,000, a record.

Difficulty due to paper supplies still curtailed the size of the *Journal*, and it was hoped some relaxation of control would soon allow more papers to be published. The demand for copies of the permanent way text book, " British Railway Track," continued, and many applications were being received from overseas.

The Treasurer (Mr. F. Lawson) gave particulars of the finances for 1944 and reported a surplus of £242 on the year's working. This had been placed in the General Reserve Fund, which now stood at £2,657. The statement of accounts and balance sheet for 1944 were then submitted for approval and were unanimously adopted.

The President, commenting on the report read by the Secretary, said he had received a message from Major J. Cruikshank, R.E., dated June 19, 1945, as follows:—

" On behalf of Major Mahony, Major Mack, and myself, the only three Malayan Section members not in enemy hands, I send the following message—Now that the German enemy has been defeated, we hope the time will not be too long before we can send you a message to say that we have been re-united with all our fellow members who were captured by the Japanese in February, 1942.

" We have been greatly heartened for our future tasks by the magnificent record of service of our fellow permanent way men of all grades in Britain during the war against Germany, and we feel proud to be associated with them in that most democratic of all Institutions—the P.W.I. We remember with gratitude the help and encouragement so willingly given to us in pre-war years by the Council, and by the Sections in Britain, and we look forward to the days when the records of a vigorous Malayan Section will again appear in the *Journal*.

" Meantime we send you all good wishes for your strenuous work in the coming years to maintain British permanent way, as always, the finest in the world."

This message was received with appreciation, and the Secretary was requested to convey to Major Cruikshank the members' thanks and very best wishes.

Mr. Robertson then remarked that with the cessation of hostilities in Europe it was hoped that 1946 would see the resumption of summer conventions. The Notts & Derby Section had suggested that the next convention be held in Nottingham in July, 1946, and, on the proposition of Mr. J. H. Knotts, this suggestion was heartily agreed to.

It was decided that the winter general meeting should take place in London on Saturday, January 6, 1946.

On the proposition of Mr. B. Lloyd Davies, Vice-President for England, a vote of thanks was accorded to the President and Council of the Institution of Civil Engineers for placing accommodation at their disposal for the meetings held that day.

Mr. J. C. L. Train, Chief Engineer, L.N.E.R., then gave a talk on " Flat-Bottom Track."* In his remarks Mr. Train gave the reasons for the introduction of flat-bottom track on the L.N.E.R., and expressed thanks to Mr. Wallace, Chief Civil Engineer, L.M.S.R., for information so freely given respecting the lengths of flat-bottom track being tested on that system. Lantern slides were shown of the track as laid down on the L.N.E.R. and also of the point-and-crossing work.

In proposing a vote of thanks to the speaker, Mr. Wallace said that Mr. Train had given an interesting introduction to an interesting subject. On the L.M.S.R. they had plain road but no point and crossing work, so the L.N.E.R. was the pioneer in that respect.

* Illustrated articles on flat-bottom track on the L.N.E.R. appeared in our issues of October 6 and 20, 1944

Honours for Great Western Railway Ambulance Workers

As a result of recommendations made by the Great Western Railway Central Ambulance Committee, Mr. A. V. R. Brown, Divisional Superintendent, Birmingham, and Dr. W. B. Winkworth, Taunton, have been admitted to the Order of St. John of Jerusalem in the grade of Serving Brother. Mr. Brown gained his first-aid certificate in 1917, and was awarded the G.W.R. 15-year gold efficiency medal in 1932; he has rendered outstanding service to the First Aid Movement in the Bristol, Chester and Birmingham Divisions. Dr. Winkworth has been lecturer and examiner to G.W.R. ambulance classes at Taunton since 1896.

The following members of the staff also have been admitted to the Order in the grade of Serving Brother for exceptional services which they have rendered to the movement on the G.W.R. over long periods:—

Mr. W. E. J. Perks, Clerk, District Goods Manager's Office, Gloucester (Mr. Perks is Divisional Ambulance Secretary to the G.W.R. Gloucester Division).

Mr. E. F. Bealey, Clerk, Traffic Department, Redruth.

Mr. W. Whitcombe, Fireman, Chief Mechanical Engineer's Department, Severn Tunnel Junction.

Mr. I. Boyer, Goods Guard, Traffic Department, Radyr Junction.

Mr. J. A. Cooper, Inspector, Traffic Department, Birmingham.

Mr. H. G. Fletcher, Inspector, Goods Department, Hockley.

On the recommendation of the St. John Ambulance Brigade, the undernamed have been promoted to the grade of Officer (Brother) in the Order:—

Mr. F. Overbury, Clerk, Goods Department, Hockley (Mr. Overbury is Divisional Ambulance Secretary to the G.W.R. Birmingham Division and Divisional Superintendent in the St. John Ambulance Brigade).

Mr. G. N. Bullock, Clerk, Traffic Department, Hereford Barrs Court (Mr. Bullock is Assistant County Commissioner for the St. John Ambulance Brigade in Herefordshire).

Notes and News

Swiss Orders for the U.S.A.—The Administrative Board of the Swiss Federal Railways has approved the purchase of 5,000 *tonnes* of American rails at a total cost of two million Swiss francs.

United States Rail Exports to Spain.—Reuters reports from Washington that the United States Foreign Economic Administration has rejected an application for permission to export to Spain 100,000 tons of steel rails from the plant of the Bethlehem Steel Corporation at Sparrows Point, Maryland.

Argentine Railways Mission to the U.S.A.—It is reported that the technical mission representing British-owned railways in Argentina, headed by Major R. K. Hubbard, Deputy General Manager of the Central Argentine Railway, to which reference was made in our June 29 issue, has arrived in the U.S.A.

Fruit Transport on the Southern Railway.—During June, as compared with June of last year, the Southern Railway carried increased quantities of tomatoes from the Worthing area, and fruit from the Kent orchards to London and provincial markets. The tomato traffic from the Worthing area comprised 251,499 packages and the Kent fruit amounted to 9,912 tons in 4,075 wagons.

Road Accidents in May, 1945.—The return issued by the Ministry of War Transport of the number of persons reported to have died, or to have been injured, as a result of road accidents in Great Britain during the month of May last shows 424 deaths (compared with 632 in May, 1944), 2,442 seriously injured (compared with 3,222 in May, 1944), and 6,976 slightly injured (compared with 8,290 in May, 1944).

John Brown & Co. Ltd.—The directors of John Brown & Co. Ltd. propose a consolidation of the "A" and "B" 7 per cent. non-cumulative preference shares; to convert the issued share capital into stock; and to adopt new articles of association. The "A" and "B" preferences rank *pari passu*, but each "A" share is 12s. and each "B" is 6s. It is proposed to subdivide each "A" share into two preferences of 6s. each so as to form with the "B" preference one uniform class of 7 per cent. non-cumulative preference of 6s. The change will not alter the rights of any class of capital. An extra-ordinary meeting will follow the annual meeting to be held at 4, The Sanctuary, S.W.1, on July 27, at 3 p.m.

Pullman Incorporated.—The consolidated net income for the first quarter of 1945 of Pullman Incorporated (not including operating results of the Kellogg Company subsidiary) amounted to $2,433,747 ($0·75 per share) after all taxes and other charges and appropriation to reserves. A dividend of 50 c. per share on the capital stock of Pullman Incorporated was payable on June 15, 1945, to stockholders of record May 25, 1945. On March 22, 1945, the U.S. District Court at Philadelphia entered a supplemental order giving Pullman Incorporated one year, or until March 22, 1946, to comply with the separation decree handed down by that Court on May 8, 1944, pursuant to which the Corporation elected to dispose of the sleeping car business. This new order permits broad freedom of action in effecting the separation of the sleeping car business, either by sale of physical assets, as heretofore proposed to the rail roads, or by sale of all of the shares of the capital stock of the Pullman Company owned by Pullman Incorporated. Accordingly, negotiations to that end have been opened with the railroad-users of Pullman sleeping car service.

Corrugated "Perspex" Sheet.—The transparent plastic material known as "Perspex," manufactured by Imperial Chemical Industries Ltd., and used in all types of aircraft during the war, is now available in corrugated sheet form for roof and wall lighting. The material which should prove to be very convenient for providing shadow-free lighting in workshops and factories, has a high safety factor and will not crack or splinter.

United of Havana Railways Moratorium.—To allow time for the legal proceedings requisite in connection with proposals for the reorganisation of the loan capital of the United Railways of the Havana & Regla Warehouses Limited and the holding of the necessary meetings of the debenture holders to consider these proposals, the stockholders' committee appointed under the scheme of arrangement of June 27, 1930, has authorised the extension for one further year of the operation of that scheme, as amended and extended.

Canadian Pacific Railway.—With the approval of the Admiralty and the Ministry of War Transport, the Canadian Pacific Railway Company has placed contracts with the Fairfield Shipbuilding & Engineering Co. Ltd., of Glasgow, for the construction of four cargo vessels. Three of the ships are being built at the Kingston shipyard of Lithgows Limited, Port Glasgow, and the fourth will be built at the Govan Yard of the Fairfield Shipbuilding & Engineering Co. Ltd. The ships will have about 200,000 cu. ft. of refrigerated space and an uninsulated space equipped with mechanical ventilation.

Chloride Electrical Storage Co. Ltd.—The report of Chloride Electrical Storage Co. Ltd. for the year ended March 31, 1945, shows that the net profit, after taxation, was £301,033 (£267,672). Adding £176,905 brought forward makes £477,938. Appropriations are made of £50,000 (same) to reserve for development and research, of £2,000 (same) to employees' benefit fund, of £25,000 (same) to pensions fund for employees in the parent company, of £20,000 (nil) to subsidiary companies' pension fund, and £10,000 (same) for extending application of scheme of pensions for employees of subsidiary companies. On the "A" and "B" ordinary stocks the dividend for the year is again 10 per cent. with a bonus of 5 per cent., both less tax, and the amount to be carried forward is £203,913.

Skefko Ball Bearing Co. Ltd.—At the 35th ordinary general meeting of the Skefko Ball Bearing Co. Ltd., Sir Ralph G. C. Glyn, Bt., the Chairman, pointed out the vital importance of the company's production in maintaining the output of munitions of war of all kinds, as well as other essential services, including the nation's transport. From the company's productive shops there had been delivered for assembly into practically every class of mechanical equipment used by the fighting services, millions of bearings constructed according to design requirements from the four distinct types of S.K.F. rolling elements—the steel ball, the cylindrical, the tapered and the spherical roller. With reference to peace-time trading, every effort had been made to maintain the plant in the highest state of efficiency, but continuous working would necessitate considerable replacements in the near future and a substantial amount of factory reconstruction work would have to be carried out.

North Western Road Car Co. Ltd.—The North Western Road Car Co. Ltd., which is jointly controlled by L.M.S.R., L.N.E.R. and B.E.T. Omnibus Services Limited, reports for the year to March 31, 1945, an income, after expenses, depreciation and renewals, of £400,135 (£403,650). Deductions are made of £75,156 (£72,333)

British and Irish Railway Stocks and Shares

Stocks	Highest 1944	Lowest 1944	Prices July 17, 1945	Prices Rise/Fall
G.W.R.				
Cons. Ord.	62¾	55	56½	—
5% Con. Pref.	122½	114¾	121½	+ 1
5% Red. Pref. (1950)	110½	104	105	—
5% Rt. Charge	135½	128	131½	—
5% Cons. Guar.	134¼	125	129½	—
4% Deb.	118¾	112¾	114	—
4½% Deb.	118¼	114	115½	—
4½% Deb.	124¼	119½	121½	—
5% Deb.	137	129½	135½	—
2½% Deb.	77	73½	76½	—
L.M.S.R.				
Ord.	34¾	27⅞	28	— ¼
4% Pref. (1923)	64½	55	59	—
4% Pref.	81	72½	78	+ ½
5% Red. Pref. (1955)	105⅞	102	103½	—
4% Guar.	107½	99½	103½	—
4% Deb.	111½	104	109	+ ½
5% Red. Deb. (1952)	111	108	108½	—
L.N.E.R.				
5% Pref. Ord.	10½	7⅞	7½	—
Def. Ord.	5⅛	3¾	3½	—
4% First Pref.	68⅝	55½	57	— ½
4% Second Pref.	35⅝	28½	29½	—
5% Red. Pref. (1955)	101	97¾	101	— ¼
4% First Guar.	101½	96⅝	101½	+ ½
4% Second Guar.	95½	88½	95½	— ½
3% Deb.	88½	80⅜	88	+ ⅝
4% Deb.	110½	103½	108	—
5% Red. Deb. (1947)	105⅜	101½	101½	—
4½% Sinking Fund Red. Deb.	107	104½	104½	—
SOUTHERN				
Pref. Ord.	80½	71⅞	75½	+ ½
Def. Ord.	26⅜	23	24	— ¼
5% Pref.	122	113½	119½	+ 1
5% Red. Pref. (1964)	117½	112½	114½	—
5% Guar. Pref.	134	125½	129½	—
5% Red. Guar. Pref. (1957)	115½	112½	115½	—
4% Deb.	118	110	113	—
5% Deb.	135½	127	134½	—
4% Red. Deb. (1962-67)	111½	107½	109½	—
4% Red. Deb. (1970-80)	112	108¾	110½	—
FORTH BRIDGE				
4% Deb.	107	103	104	—
4% Guar.	106½	102	104	—
L.P.T.B.				
4½% "A"	125	119	121½	+ 1
5% "A"	133½	128	131½	—
3% Guar. (1967-72)	99½	98	99	—
5% "B"	124½	118⅞	120½	—
"C"	72½	64½	67½	—
MERSEY				
Ord.	35¾	33	36½	—
3% Perp. Pref.	72	66	71	—
4% Perp. Deb.	105	103	106 xd	—
3% Perp. Deb.	85½	79½	83 xd	—
IRELAND*				
BELFAST & C.D.				
Ord.	9	6	6½	—
G. NORTHERN				
Ord.	33⅞	19	28⅞	+ 2⅞
Pref.	49	37	46½	+ 2½
Guar.	70	57⅞	70	+ 1½
Deb.	90½	81½	91	+ 1
IRISH TRANSPORT				
Common	—	—	78½	+ 3½
3% Deb.	—	—	100	+ ½

* Latest available quotation

for fuel tax and licences, £252,174 (£258,412) for taxation, £1,142 (£2,316) for war damage, and £3,050 (£2,926) for directors' fees, leaving a net profit of £68,613, plus £23,552 brought in. The dividend for the year is 9 per cent., tax free (same) and £24,665 is carried forward.

Rule of the Road in China.—One more country to change its driving rule of the road is China. In view of the increasing number of U.S.A. vehicles entering China (with the left-hand driving seat), the Chinese National Government proposes to enforce driving on the right of the road, instead of the left, as from October 1 next.

G.W.R. Extension of Time Application.—The Great Western Railway Company is applying to the Minister of War Transport for an Order under the Special Enactments (Extension of Time) Act, 1940, extending by three years the time now limited by Section 40 of the Great Western Railway Act, 1937, for the completion of Railway No. 1 (Denham & Ruislip), Railway No. 2 (Dawlish & Exminster) and Railway No. 3 (Pyle) authorised by that Act as extended by the Great Western Railway (Extension of Time) Order, 1942, and expiring on October 1, 1945.

Red Cross Coach at Waterloo.—The Red Cross exhibition coach, which began its 4,000 miles' railway tour at Warrington on January 1 of this year, entered the last phase of its journey when it was opened by Lord Southwood, Chairman of the British Red Cross Penny-a-Week Fund, at Waterloo on July 2. In the course of his speech Lord Southwood said that although collections for the Red Cross and St. John Fund had ended on June 30, he was particularly grateful to the Southern Railway for arranging for the tour to continue, so that employees and the public could see how their contributions had been used to help their comrades, now happily returned from captivity, the sick and the wounded, and all who had suffered from the war. The opening ceremony, presided over by Colonel Eric Gore Browne, D.S.O., O.B.E., T.D., A.D.C., Chairman, Southern Railway, was well attended and among other speakers were Mrs. O. S. Prentice, O.B.E., Director, County of London British Red Cross Society, Miss Greta Richards, the Railway Queen, and Mr. H. E. Aggett, District Organiser, National Union of Railwaymen.

Grand Union Canal Charges.—The Minister of War Transport on July 2, 1945, made "The Grand Union Canal (Increase of Charges) Order, 1945."

Paris Metro in 1944.—The net profit returned by the Compagnie du Chemin de fer Metropolitain de Paris for 1944 was fr. 37,140,000, compared with fr. 49,080,000 for 1943.

Rails from Luxembourg for Switzerland.—According to a recent announcement by the Comptoir Metallurgique Luxembourgeois, the first consignments of railway rails for Switzerland to be supplied after more than six years will leave Luxembourg shortly.

Military Ports in West Scotland.—Through a typographical error the descriptions of the two photographs we reproduced on page 42 of our July 13 issue wrongly identified the particular piers. The top picture shows the deep water berth of No. 1 Military Port, Gareloch. The lower illustration shows the approach to one of the piers at No. 2 Military Port, Loch Ryan.

Institute of British Travel Agents Limited.—At an extraordinary general meeting of the Institute of British Travel Agents Limited held on June 29 a special resolution was passed that the company be wound up voluntarily and that Richard Henry Moore of 10, Norfolk Street, Strand, London, be appointed liquidator.

Maidstone & District Motor Services Limited.—The Maidstone & District Motor Services Limited, a subsidiary of the Southern Railway Company and of B.E.T. Omnibus Services Limited (jointly), earned in the year to March 31, 1945, traffic receipts and other income amounting to £1,269,662 (£1,219,877). Operating expenses, etc., absorbed £714,726 (£644,690), fuel and Road Acts duties £98,058 (£94,270), provision for taxation £279,370 (£330,471), and depreciation and renewals £74,655 (£65,379). After providing for other charges, there is a credit balance on profit and loss account of £88,594 (£71,046). Adding £39,711 brought in makes £128,305 (£108,398) available. General reserve gets £20,000, and the total distribution for the year on the ordinary shares is maintained at 11½ per cent., less tax, being 10 per cent. dividend and 1½ per cent. bonus, leaving £59,618 to be carried forward.

French Increase in Passenger Fares.—The French National Railways are considering doubling their passenger fares by gradual stages. The date at which the first stage of increase will become effective has not been fixed yet.

Barranquilla Railway Capital Reduction.—In the Chancery Division on July 16 Mr. Justice Uthwatt confirmed a reduction of the capital of the Barranquilla Railway & Pier Co. Ltd. by returning 4s. a share on 750,000 shares of 16s. each.

L.N.E.R. Extension of Time Order.—The Minister of War Transport has made the London & North Eastern Railway (Extension of Time) Order, 1945, extending by three years the time limited by Section 8 of the L.N.E.R. Act, 1937, as extended by the L.N.E.R. (Extension of Time) Order, 1942, for the completion of the railway in West Ham authorised by Section 4 of that Act.

Institution of Metallurgists.—Application has been made to the Board of Trade for a licence directing an association about to be formed under the name of "Institution of Metallurgists" to be registered with limited liability without the addition of the word "limited" to its name. Any objection to the application must be made by letter addressed to the Principal Assistant Secretary, Board of Trade, Insurance & Companies Department, Romney House East, Tufton Street, S.W.1, by July 30.

Keith Blackman Limited.—The profit and loss account of Keith Blackman Limited for the year ended March 31, 1945, shows a trading profit, after charging all expenses, of £159,826 (£218,455); the profit, after making provision for depreciation, director's fees, etc., is £135,684 (£192,451), to which is added £43,497 brought forward, making £179,181. From this amount provision is made of £93,500 (£150,000) for taxation and £10,000 (same) is transferred to reserve. The dividend on the ordinary shares is 20 per cent., less tax, the same as for the past three years, leaving £45,181 to be carried forward. The amount of business done during the year was below that of the previous year due to falling off in demand for war products.

Red Cross Exhibition Coach at Waterloo, S.R.

Lord Southwood, Chairman of the British Red Cross Penny-a-Week Fund, speaking at the official opening of the Red Cross exhibition coach at Waterloo Station, Southern Railway, on July 2 (see accompanying paragraph)

Contracts and Tenders

Below is a list of orders placed recently by the Egyptian State Railways:—

Imperial Chemical Industries (Paints) Limited: Dyes, etc.
Lewis Berger & Sons Ltd.: Dyes.
Docker Brothers: Varnishes, etc.
Standard Telephones & Cables Limited: Testing apparatus.
Yorkshire Patent Steam Wagon Company: Water gauges.
Pyrene Co. Ltd.: Extinguishers.
Tubes Limited: Steel pipes.
P. & W. MacLellan Limited: Steel bars.
Rivet, Bolt & Nut Co. Ltd.: Rivets.
Alley & MacLellan Limited: Pneumatic tools.
Reavell & Co. Ltd.: Pneumatic tools.
J. Hudson & Company: Reed shunters' horns.
James Mills Limited: Split taper pins.
British Oxygen Co. Ltd.: Welding material.
Haggerty Lawrence & Company: Welding material.
Joseph Tomey & Sons Ltd.: Gauge glasses.
Wellington Tube Works Limited: Tubes.
G. & J. Hall Limited: Taps.
Henry Gardner & Co. Ltd. Lead.

Railway Stock Market

Sentiment in Stock Markets continued to be governed by the disposition to await the result of the election, and business in most sections again contracted. Nevertheless, British Funds remained steady, and industrial shares generally were well maintained with a number of good features arising from dividend announcements and other special developments.

After a reaction, home rails came into renewed demand and rallied steadily in price, the junior stocks continuing to attract on yield considerations and the forthcoming interim dividends, while prior charges and other stocks reflected investment buying. Maintenance of the Great Western interim of 2 per cent. is being confidently expected, and an interim of 1 per cent. is again being anticipated on L.N.E.R. second preference, also 2½ per cent. on Southern preferred, the decision as to Southern deferred having to be left until the end of the year. Southern deferred is on a 2 per cent. dividend basis, and this is confidently expected to continue so long as the fixed rental is in force. Moreover, Great Western's 4½ per cent. total can also be expected to be repeated, and there are considered to be reasonable prospects of the 2¾ per cent. total on L.N.E.R. second preference being maintained, the assumption being that it would not have been improved to this rate unless there were good possibilities of it being continued throughout the remaining period of control. The particularly large yield on L.N.E.R. second preference reflects the fact that the 2¾ per cent. dividend is not covered by a large margin; but the return from the fixed rental is assured, and ancillary revenue seems more likely to increase than diminish. The payment on L.M.S.R. ordinary has been 2½ per cent. for each of the past three years, but there have been no interim dividends, this conservative policy having been followed partly because of possible variation in ancillary income. There is little hope in the market on this occasion of an interim, the prevailing view being that the previous policy is unlikely to be reversed at this stage. A General Election victory for Mr. Churchill would doubtless lead to buoyant conditions in stock markets in which home rails would probably participate strongly. The junior stocks are well below highest prices recorded last year, and the large yields are tending to have added attractions because of the small yields ruling on industrial shares and most other equity securities. Last year's highest prices included Great Western at 62¾, L.M.S.R. at 34⅜, L.N.E.R. second preference at 35⅝, and Southern deferred at 26⅝. Southern preferred touched 80¼ at one time last year, while L.M.S.R. senior preference was up to 81, the 1923 preference 64½, and L.N.E.R. first preference 68⅞. These preference stocks have in recent weeks attracted attention on their investment merits, and they would be expected to show satisfactory response to any general market rally following the election result. It is not, however, contended that last year's highest levels would be regained. Moreover, in the event of an unfavourable outcome to the election, home rails would be expected to move back with markets.

There has been little activity in Argentine rails, although hopes persist of some improvement in net revenues for the financial year ended last month. In the absence of demand, prices receded moderately. Elsewhere, however, Leopoldina debentures and preference stock responded to the latest traffics, while Antofagasta preference was good on hopes of improved results for the current year. United of Havana 1906 debentures were little changed, awaiting the capital scheme. Canadian Pacifics remained active, and improved in price. French rail bonds strengthened, partly in sympathy with a better tendency in European bonds following the opening of the Potsdam conference.

Compared with a week ago, Great Western was slightly lower at 56½, compared with 56¾, an earlier decline not having been fully recovered; the 5 per cent. preference was higher at 121, and the 4 per cent. debentures were maintained at 114. L.M.S.R. at 28 was ¼ down on balance, the 1923 preference 58⅜, compared with 59⅛, and the senior preference 77¼, compared with 77⅛. L.N.E.R. second preference was 29, as against 29¾ a week ago, and the first preference 56¾, against 57⅛. Southern deferred 24, compared with 24½, and the preferred was maintained on balance at 76. Southern 5 per cent. preference further improved to 119. London Transport "C" at 68 was the same as a week ago.

Last week's gains in Argentine rails were lost, Buenos Ayres Great Southern receding to 11¾, the 5 per cent. preference to 26¾ and the 4 per cent. debentures to 63½. Argentine Great Western 5 per cent. debentures, however, remained firm at 59½, while Central Argentine 5 per cent. debentures at 67½ and Buenos Ayres & Pacific consolidated debentures at 58½ were little changed.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1943/4	No. of Weeks	Aggregate traffics to date: Totals 1944/5	Aggregate traffics to date: Totals 1943/4	Aggregate traffics to date: Increase or decrease	Shares or Stock	Prices: Highest 1944	Prices: Lowest 1944	Prices: July 17, 1945	Yield % (See Notes)
				£	£		£	£	£					
South & Central	Antofagasta (Chili) & Bolivia	834	8.7.45	29,030	— 5,170	27	829,390	769,170	+ 60,220	Ord. Stk.	13½	9½	10½	Nil
	Argentine North Eastern ...	753	8.7.45	17,969	+ 2,794	1	17,969	17,606	+ 363	,,	6¾	4¼	9	Nil
	Bolivar	174	June, 1945	4,640	— 598	26	30,275	31,756	— 1,481	6 p.c. Deb.	18¾	7½	8½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	19-⅞	15	23	Nil
	Buenos Ayres & Pacific ...	2,773	7.7.45	119,250	+ 4,562	1	119,250	116,312	+ 2,938	Ord. Stk.	7⅛	3¾	5¼	Nil
	Buenos Ayres Great Southern	5,080	7.7.45	180,625	+ 21,812	1	180,625	179,375	+ 1,250	Ord. Stk.	14⅝	9¾	11¾	Nil
	Buenos Ayres Western ...	1,924	7.7.45	66,063	+ 6,313	1	66,063	65,375	+ 688	,,	13¾	9½	11¾	Nil
	Central Argentine	3,700	7.7.45	177,475	+ 3,578	1	177,475	195,366	— 17,891	,,	10¾	6¾	8¼	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4¾	3	4¼	Nil
	Cent. Uruguay of M. Video	972	7.7.45	35,835	— 764	1	35,835	39,777	— 3,942	Ord. Stk.	5¼	4	6¼	Nil
	Costa Rica	262	May, 1945	27,205	+ 680	38	259,151	251,679	+ 7,472	Stk.	17½	14½	15	Nil
	Dorada	70	June, 1945	33,780	+ 7,554	26	182,375	149,309	+ 33,066	1 Mt. Deb.	101	101	101½	£5 18
	Entre Rios	808	8.7.45	25,700	+ 4,082	1	25,700	24,625	+ 1,075	Ord. Stk.	6½	4½	5	Nil
	Great Western of Brazil ...	1,030	7.7.45	23,000	+ 2,300	27	677,300	597,900	+ 79,400	Ord. Sh.	38/-	23/3	25/-	Nil
	International of Cl. Amer. ...	794	May, 1945	$231,658	+ $54,597	22	$1,047,719	$1,092,563	— $44,844	—	—	—	—	—
	Interoceanic of Mexico ...	—	—	—	—	—	—	—	—	1st Pref.	1¾	¼	1	Nil
	La Guaira & Caracas... ...	22¾	June, 1945	7,106	— 1,171	26	36,929	46,430	— 9,501	5 p.c. Deb.	88	79	78½	£6 7/5
	Leopoldina	1,918	7.7.45	54,467	+ 16,742	27	1,288,020	1,214,423	+ 73,597	Ord. Stk.	5¼	4¼	4	Nil
	Mexican	483	7.7.45	ps. 533,400	+ ps. 31,700	27	—	—	—	Ord. Stk.	½	⅛	2	Nil
	Midland Uruguay	319	May, 1945	19,738	+ 3,567	48	195,444	187,809	+ 7,635	—	—	—	—	—
	Nitrate	382	15.7.45	4,436	— 1,979	28	95,916	98,921	— 3,005	Ord. Sh.	75/10	65/10	74/6	£3 7/
	Paraguay Central	274	6.7.45	£74,220	+ £17,146	1	£58,382	£57,074	+ £1,308	Pr. Li. Stk.	79½	68	77½	£7 14/
	Peruvian Corporation ...	1,059	June, 1945	124,966	+ 3,615	52	1,554,661	1,330,647	+ 224,014	Pref.	9	10	9½	Nil
	Salvador	100	May, 1945	c 112,200	+ c 18,000	48	c 1,420,000	c 1,404,000	+ c 16,000	—	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	57¾	46	55½	£3 12/
	Taltal	156	June, 1945	3,795	— 1,735	52	36,700	65,330	— 28,630	Ord. Sh.	21/3	13/9	13/9	Nil
	United of Havana	1,301	7.7.45	40,969	— 3,153	1	40,969	50,421	— 9,452	Ord. Stk.	4	2½	2	Nil
	Uruguay Northern	73	May, 1945	1,830	— 151	48	18,089	16,412	+ 1,677	—	—	—	—	—
Canada	Canadian Pacific	17,038	7.7.45	1 248,600	+ 40,400	27	32,194,200	32,123,200	+ 71,000	Ord. Stk.	17¼	13-11/16	20⅜	£4 17
India	Barsi Light	202	May, 1945	23 902	+ 652	9	54,975	51,682	+ 3,293	Ord. Stk.	129½	97½	129½	£3 9/6
Various	Egyptian Delta	607	20.6.45	15,157	— 2,685	11	130,413	150,324	— 19,911	Prf. Sh.	7-13/16	5¼	6½	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	63½	58	60	Nil
	Midland of W. Australia ...	277	May, 1945	17,489	— 4,344	48	207,237	312,987	— 105,750	Inc. Deb.	101½	99½	95¼	£4 3/9
	Nigeria	1,900	26.5.45	277,630	+ 23,531	4	—	—	—	—	—	—	—	—
	South Africa	13,301	9.6.45	1,025.225	+ 182,026	10	9,665,074	8,423,497	+ 1,241,577	—	—	—	—	—
	Victoria	4,774	Mar., 1945	1,303,804	— 60,124	4	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current price and are within a fraction of ¼. Argentine traffics are given in sterling calculated @ 16 pesos to the £

† Receipts are calculated @ 1s. 6d. to the rupee